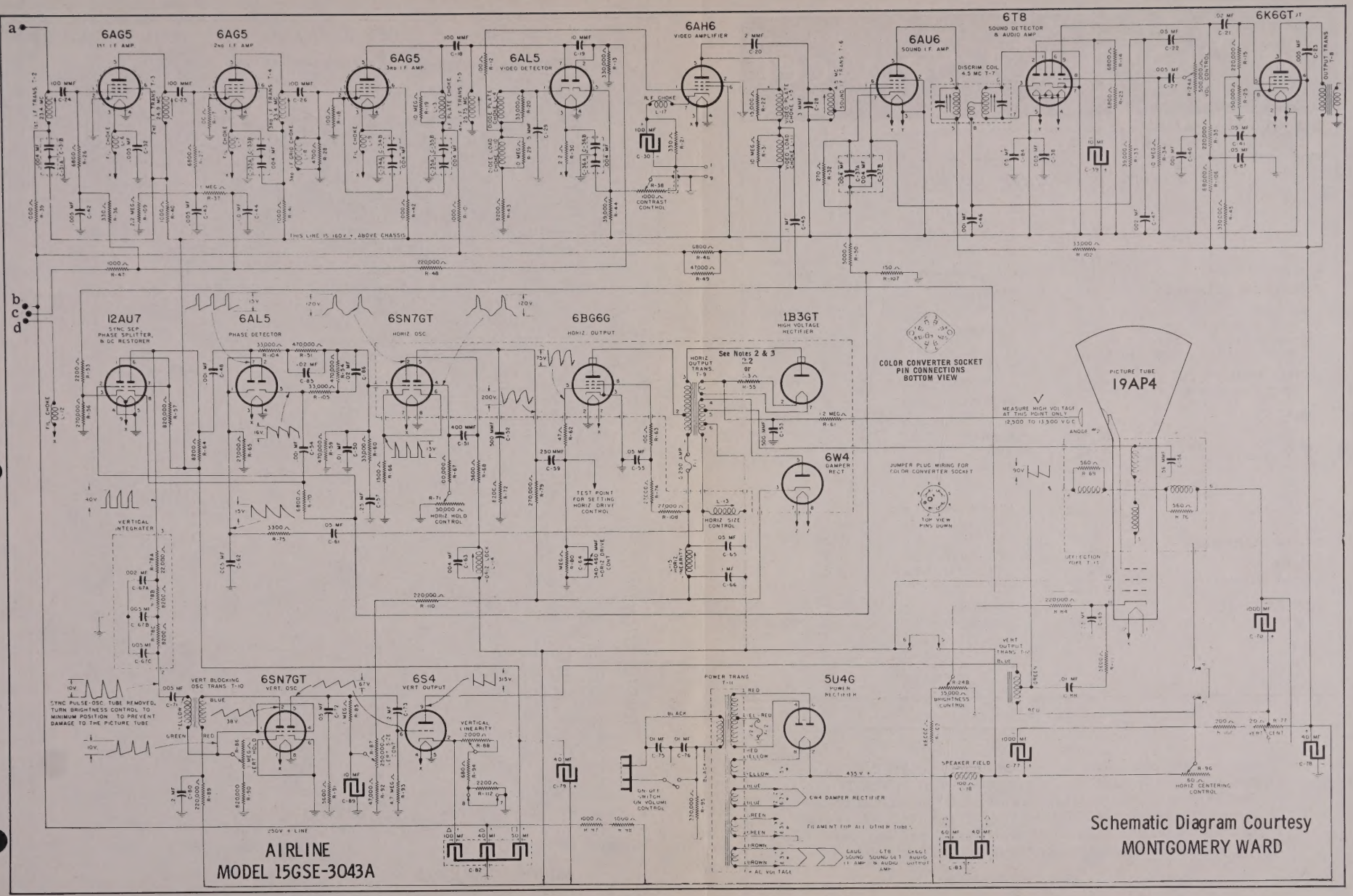
The PHOTOFACT Servicer

SET 430 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ FEB. 1, 1959

CONTENTS PHOTOFACT SET 430

TRADE NAME AND MODEL	SET AND FOLDER NO.
TELEVISION RECEIVERS	
HOFFMAN	
B1311, B3501, 11, 21, 31, K1311, K3531, M1311, M3501, 11, 21, 31, SP3501, 31, W3501, 11, 21, 31 (Ch. 339, 341, RP-409)	430-1
PACKARD-BELL	
17VT7, 21VT5 (Ch. V8-4, RM-200, RM-201)	430-2
ZENITH	
B2329R, RU, RUD, B2330E, EU, EUD, R, RU, RUD, B2335, E, EU, EUD, R, RU, RUD, U, UD, B2358E, EU, EUD, R, RU, RUD, B2359, E, EU, EUD, U, UD, B2360M, MU, MUD, R, RU, RUD, B3010E, H, R, B3011, E, Y, B3012H, R, B3013H, B3014H, R, B4007E, R, B4012H, R (Ch. 19B20, Q, U, UD)	430-3
OTHER EQUIPMENT	
ARVIN	
2584, 5583 (Ch. 1.44100, 1.44200)	430-4
FISHER	
200	430-5
FONOVOX	
9070	430-6
GROMMES	
208	430-7
LEAK	
TL/25 Plus	430-8
NUTONE	
2015, 2016	430-9
OLYMPIC	
441	430-10
PILOT	
FM-530	430-11
RCA VICTOR Tape Rec.	
SS-6, SS-8, STR-6, STR-8 (Ch. RS-166, RS-167)	430-12
SILVERTONE	
9057, A, 9058, A, 9059, A, 9060, A (Ch. 528.53320, 321, 322)	430-13
SYLVANIA	
4405 (Ch. 1-622-1)	430-14

The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.


6AG5
1st I.F. AMP.
6AG5
2nd I.F. AMP.
6AG5
3rd I.F. AMP.
6AL5
VIDEO DETECTOR
6AH6
VIDEO AMPLIFIER
6AU6
SOUND I.F. AMP.
6T8
SOUND DETECTOR & AUDIO AMP.
6K6GT
12AU7
SYNC SEP. PHASE SPLITTER, & D.C. RESTORER
6AL5
PHASE DETECTOR
6SN7GT
HORIZ. OSC.
6BG6G
HORIZ. OUTPUT
1B3GT
HIGH VOLTAGE RECTIFIER
6W4
DAMPER RECT.
COLOR CONVERTER SOCKET PIN CONNECTIONS BOTTOM VIEW
PICTURE TUBE
19AP4
6SN7GT
VERT. OSC.
6S4
VERT. OUTPUT
5U4G
POWER RECTIFIER
AIRLINE
MODEL 15GSE-3043A
Schematic Diagram Courtesy
MONTGOMERY WARD

TUBE LOCATION GUIDE

MODEL 15GSE-3043A

PICTURE TUBE
19AP4

6S4
VERTICAL AMPLIFIER

6SN7GT
VER. OSCILLATOR DISCHARGE

6W4GT
DAMPER RECTIFIER

6SN7GT
HORIZONTAL OSCILLATOR

6BG6G
HORIZONTAL OUTPUT

12AU7
SYNC SEP., PHASE SPLITTER & DC RESTORER

DO NOT MEASURE VOLTAGES ON THIS TUBE MEASURE HIGH VOLTAGE AT POINT 'V' IN CIRCUIT.

6AL5
PHASE DETECTOR

1B3GT
HIGH VOLTAGE RECTIFIER

PICTURE TUBE SOCKET

WARNING
BE CAREFUL
12,500-13,500 VOLTS

6AG5
1st I.F. AMP.

6AG5
2ND I.F. AMP.

6AG5
3RD I.F. AMP.

6AL5
VIDEO DETECTOR

WITH CONTRAST AT MAXIMUM
WITH CONTRAST AT MINIMUM

6AH6
VIDEO AMPLIFIER

6K6GT
POWER OUTPUT

6T8
SOUND DET. & AUDIO AMP.

6AU6
SOUND I.F. AMPLIFIER

5U4G
POWER RECTIFIER

6C4
OSCILLATOR

6CB6 OR 6BC5 OR 6AG5
R.F. AMPLIFIER

6CB6 OR 6BC5 OR 6AG5
MODULATOR

NOTE

CATHODES, GRID RETURNS AND HEATERS OF THE 6K6GT POWER OUTPUT, THE 6T8 SOUND DET. & AUDIO AMP., AND THE 6AU6 SOUND I.F. AMP. ARE ALL 140 VOLTS DC ABOVE CHASSIS (SEE WIRING DIAGRAM) THEREFORE ALL DC VOLTAGE READINGS SHOULD BE TAKEN WITH NEGATIVE TERMINAL OF VOLTMETER ON 140V STRING

□ THE VOLTAGES ON PINS 5 AND 7 ON THE 6AL5 PHASE DETECTOR WILL TEND TO BECOME EQUAL IN OPPOSITE POLARITY WITH AN APPLIED SIGNAL

◇ VOLTAGE WILL VARY WITH SETTING OF DRIVE CONTROL.

ALL VOLTAGE READINGS MADE WITH A VACUUM TUBE VOLTMETER
* AC VOLTAGES
▲ DETERMINED BY THE SETTING OF BRIGHTNESS CONTROL
ALL READINGS UNLESS OTHERWISE SPECIFIED MEASURED WITH NO SIGNAL INPUT.

TUNER SCHEMATIC ▶ MAIN SCHEMATIC ◀

ANT. TRANS. T-1
R.F. CHOKE L-1
R.F. CHOKE L-2
CHANNEL 1&5
a b c d

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

HOFFMAN MODELS B1311, B3501, 11, 21, 31, K1311, K3531, M1311, M3501, 11, 21, 31, SP3501, 31, W3501, 11, 21, 31, (Ch. 339, 341, AP-415, RP-409)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

HOFFMAN MODELS B1311, B3501, 11, 21, 31, K1311, K3531, M1311, M3501, 11, 21, 31, SP3501, 31, W3501, 11, 21, 31, (Ch. 339, 341, AP-415, RP-409)

HOFFMAN MODELS B1311, B3501, 11, 21, 31, K1311, K3531, M1311, M3501, 11, 21, 31, SP3501, 31, W3501, 11, 21, 31, (Ch. 339, 341, AP-415, RP-409)

MODEL SP3531 (Ch. 341)

SET 430 FOLDER 1

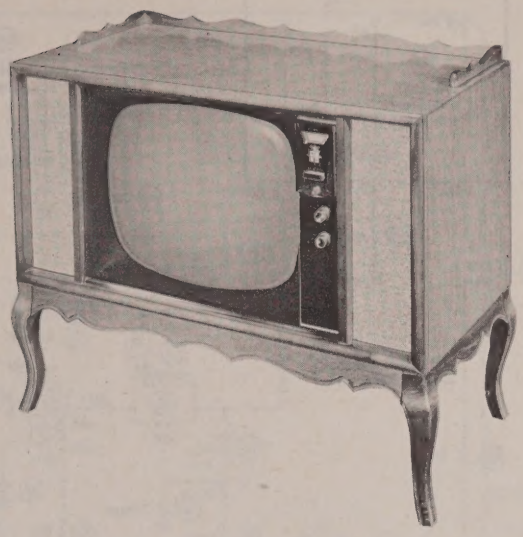
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the front.
2. Remove 8 wood screws holding rear cover. Remove the rear cover.
3. Remove picture tube socket, yoke plug, speaker and HV leads, and remote tuning leads.
4. Remove 2 bottom chassis bolts.
5. Remove 1 wood screw holding chassis at top rear.
6. Remove chassis.



MODEL SP3531 (Ch. 341)

TRADE NAME	Hoffman	MODELS	CHASSIS
		B1311, B3501, B3511, K1311, M1311, M3501, M3511, SP3501, W3501, W3511.....	339
		B3521, B3531, C3531, K3531, M3521, M3531, SP3531, W3521, W3531	341
		B3521, B3531, C3531, K3531, M3521, M3531, SP3531, W3521, W3531	RP-409 * (Remote Control)
MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles 3, Calif.		
TUBES	Nineteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	TV 200 Watts, 1.68 Amp. @ 117 Volts AC Tuning 240 Watts, 2.1 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

* Remote Control AP-415 may be used.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing Channel Selector button and opening Control Panel Door. Set the Fine Tuning to the center of its range. The adjustments are accessible one at a time as tuner shaft is rotated. To set Channel Preselector push in the activating pins adjacent to channel number of station to be received. All other activating pins should be in outward position.

SAFETY GLASS REMOVAL

Remove 6 front push-on type knobs. Remove 8 wood screws holding rear cover. Remove rear cover. Remove Remote Tuning leads from terminal board located on top of chassis. Remove 4 wood screws holding metal trim at top of safety glass. Tilt top edge of control panel outward and lift up to remove. Tilt top edge of safety glass outward and lift up to remove.

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the Area control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 10, or 6 and 2.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

FUSE

One fuse is used for low voltage power supply protection. (For location, see tube placement chart.)

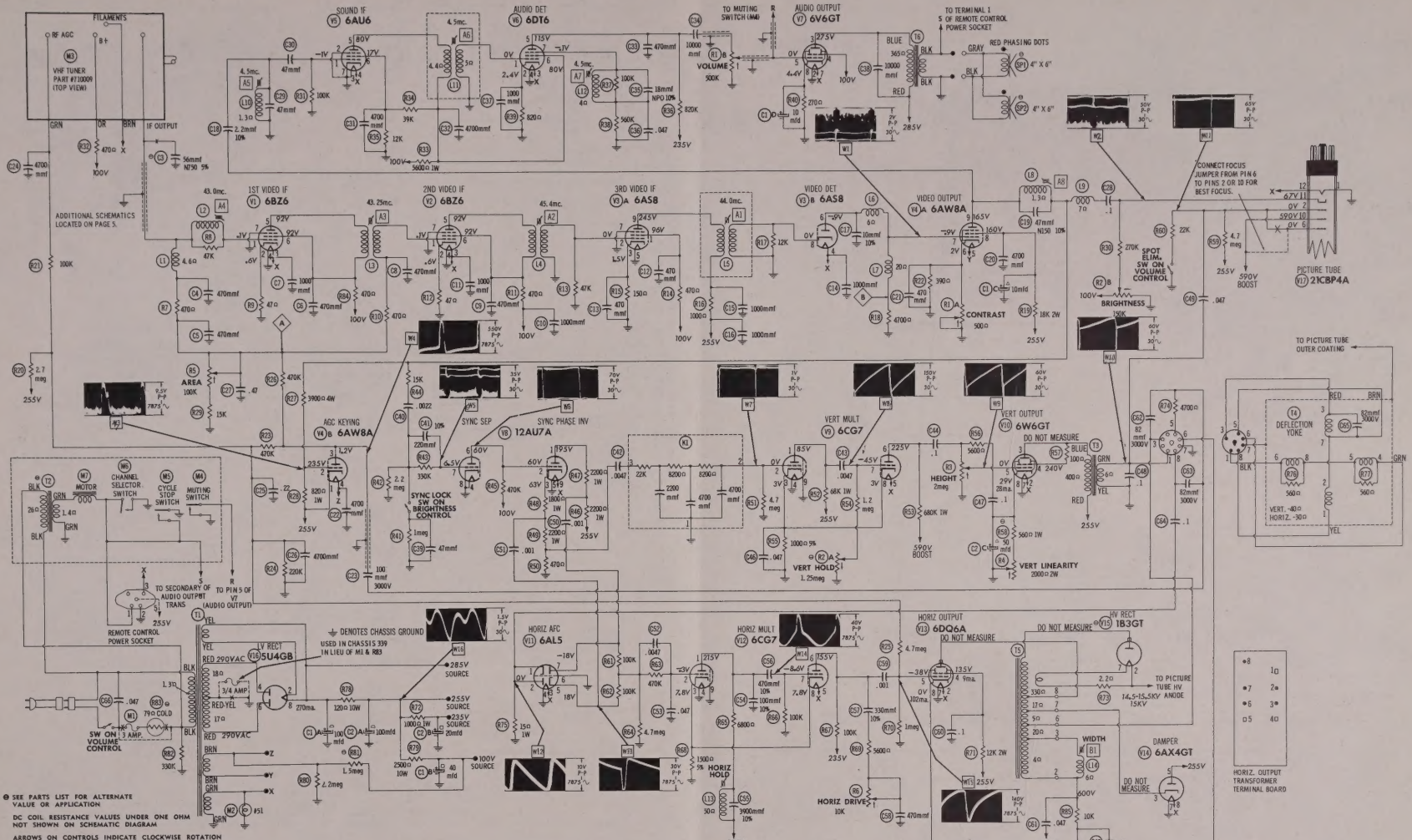
CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H994

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

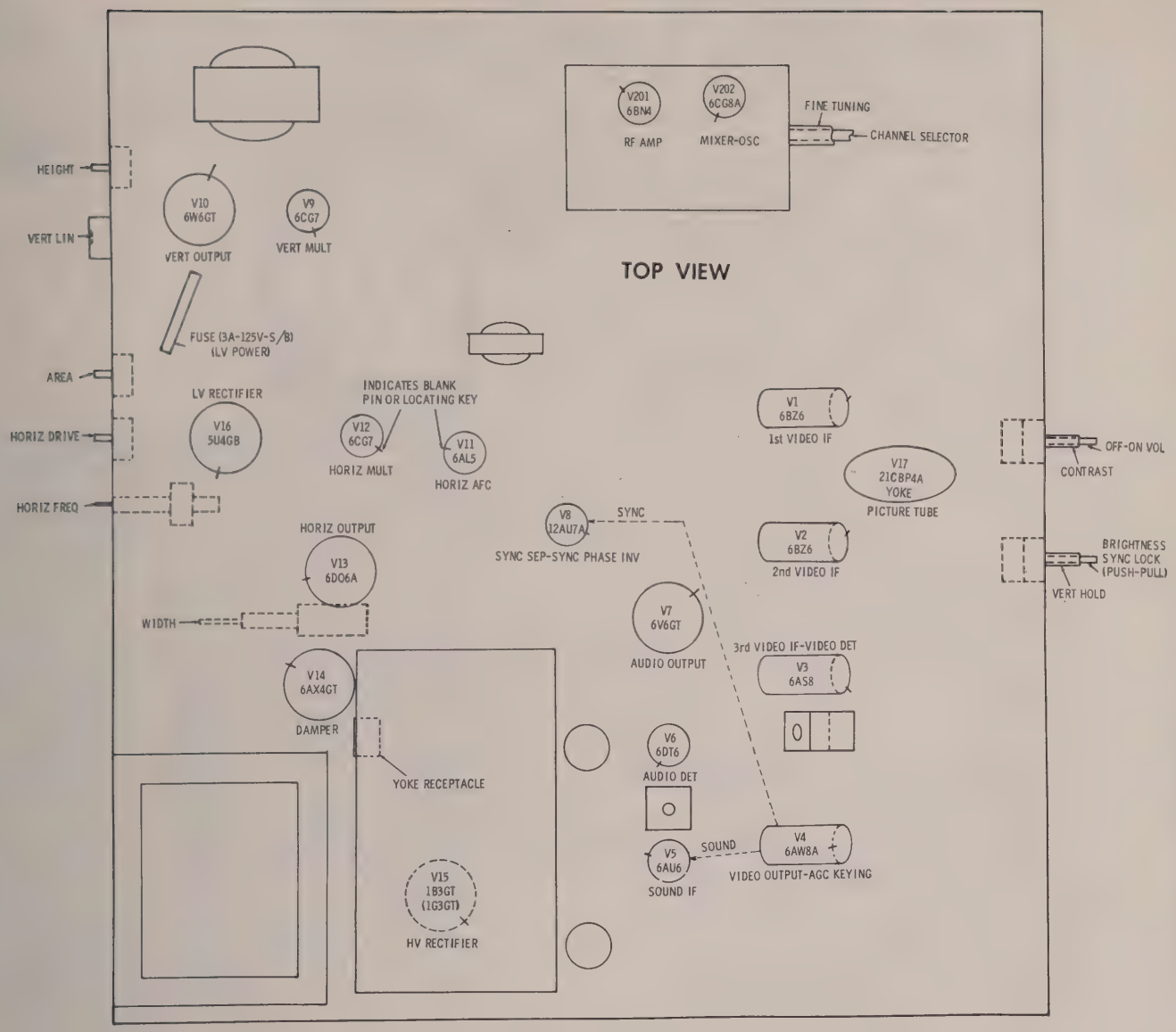
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1959

HOFFMAN MODELS 81311, B3501, 11, 21, 31, K1311, K3531, M1311, M3501, 11, 21, 31, SP3501, W3501, 11, 21, 31, (Ch. 339, 341, AP-415, RP-409)

TUBE PLACEMENT CHART



HOFFMAN MODELS B1311, B3501, 11, 21, 31, K1311, K3531, M1311, M3501, 11, 21, 31, SP3501, 31, W3501, 11, 21, 31, (Ch. 339, 341, AP-415, RP-409)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

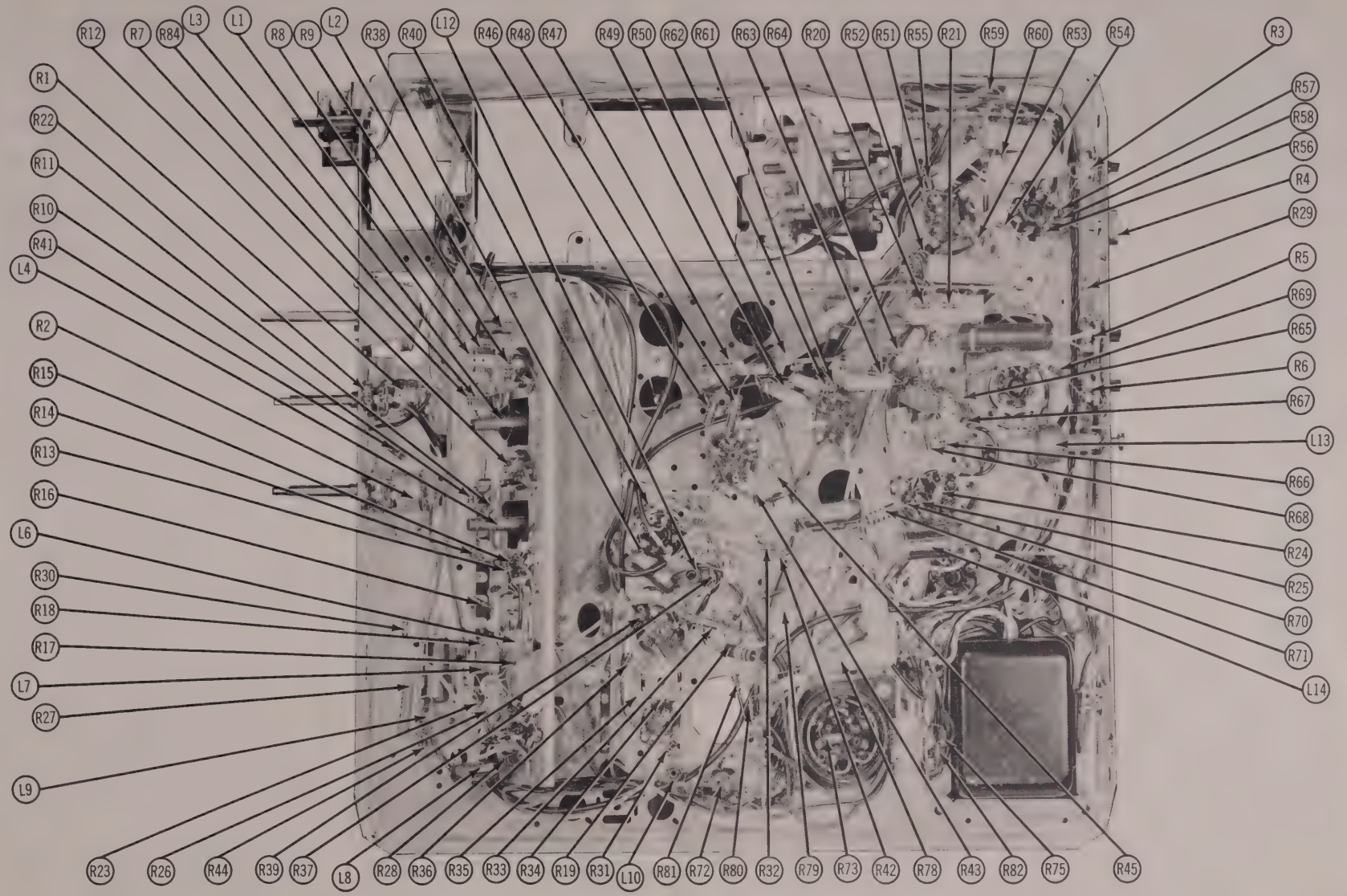
POWER SUPPLY FAILURE
No raster, no sound Fuse (3A), V16

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V15, V17
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V12, V13, V14
Narrow picture V12, V13, V14, V16
Vert. off freq. V9
Horiz. off freq. V12

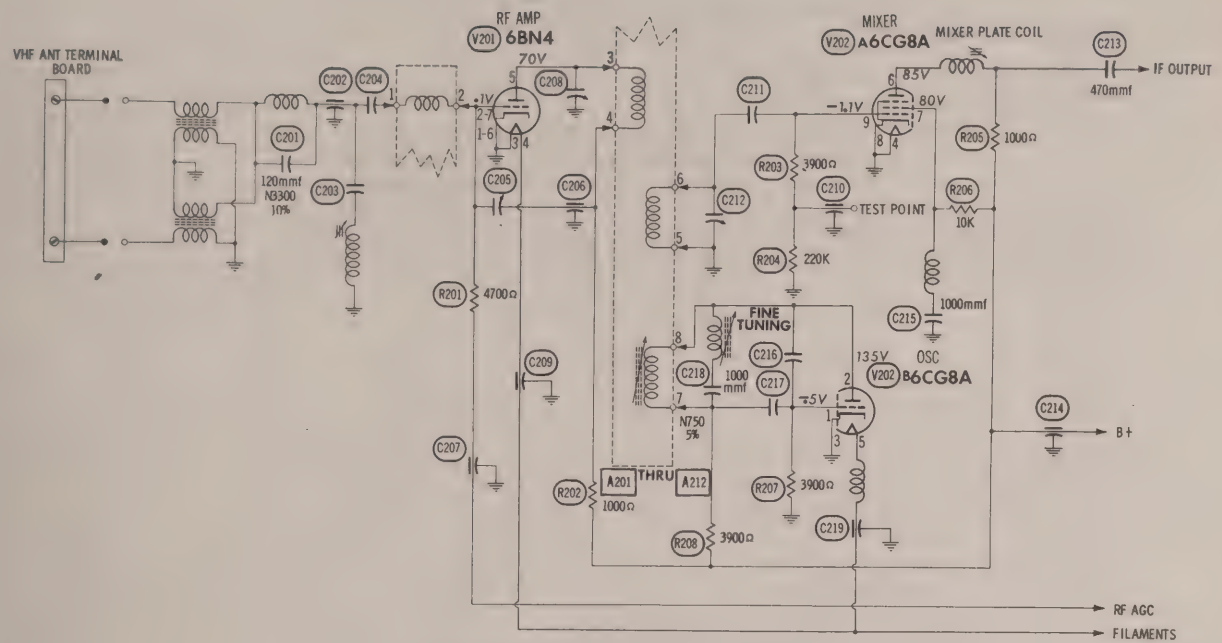
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V17
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V8
No horiz. sync V8, V11
No vert. or horiz. sync V8

FOLDER 1



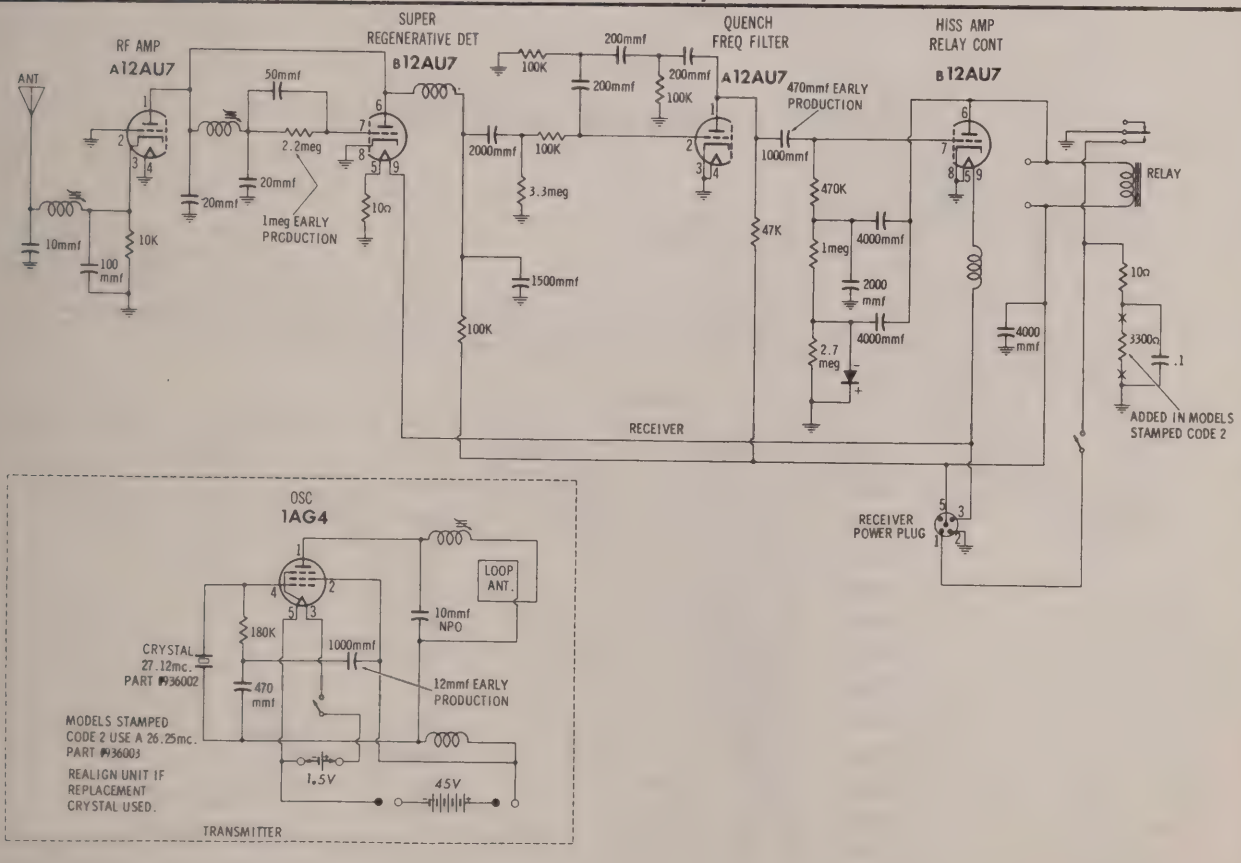
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

VHF TUNER 710009, 710010



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

REMOTE CONTROL RP-409

TUNER PARTS LIST AND DESCRIPTIONS

710009

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CG8A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120								N3300 10%
C202									
C203									
C204									
C205									
C206									
C207									
C208									
C209									
C210									
C211									
C212									
C213	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C214									
C215	1000			BPD-001	DD-102	BYA6D1	B-210	5GA-D1	
C216									
C217									
C218	1000								N750 5%
C219									

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		HOFFMAN PART No.	NOTES
	OHMS	WATT		
R201	4700Ω			
R202	1000Ω			
R203	3900Ω			
R204	220K			

ITEM No.	RATING		HOFFMAN PART No.	NOTES
	OHMS	WATT		
R205	1000Ω			
R206	10K			
R207	3900Ω			
R208	3900Ω			

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: General Cement #5009, 8195, 8274, 8275, 8728, 8987
Walsco #2531

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

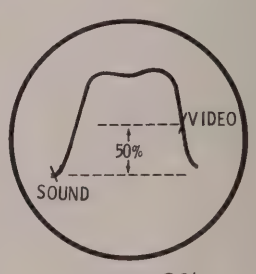


FIG. 201

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Connect the negative lead of a 60 volt bias supply to pin 5 (grid) of 6DQ6A (V13). Positive to chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Keep all signals below a level which would cause overloading.
Connect a 1000mmf capacitor across the terminals of the VTVM and scope.
Suggested alignment tools: A1 thru A8 .... General Cement #8606, 8606L, 8282, 9295
Walsco 2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A) . Positive to chassis.
Set the Contrast control fully counterclockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005mfd	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	Not used	44.0MC (Unmod)	Any non-interfering channel	USE VTVM DC probe thru 10K to point (B) . Common to chassis. (Across Video Det. load)	A1	Adjust for maximum deflection.
2.	"	"	"	45.4MC	"	"	A2	"
3.	"	"	"	43.25MC	"	"	A3	"
4.	"	"	"	43.0MC	"	"	Mixer Plate Coil, & A4	Adjust Mixer Plate Coil for MINIMUM and A4 for maximum deflection.
5.	"	"	"	45.0MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
6.	"	"	44.0MC (10MC Swp)	42.5MC 45.0MC 45.75MC	"	Vert. Amp. thru 10K to point (B) . Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A1 for proper tilt, A2 and Mixer Plate Coil for placement of 45.75MC marker, A3 and A4 for placement of the 42.5MC marker on the curve.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.005mfd	High side to point (B) . Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru 10K to pin 2 (cathode) of 6DT6 (V6). Common to chassis.	A5, A6	Detune the quadrature coil by turning A7 fully counterclockwise. (Maximum out position). Adjust A5 and A6 for maximum deflection. (Keep generator output low so VTVM reads between 3.5 - 4.5 volts.)
8.	"	"	"	"	DC probe thru 10K to pin 5 (plate) of 6DT6 (V6). Common to chassis.	A7	Set generator output to maximum. Adjust A7 slowly clockwise until a MINIMUM reading is obtained. Continue turning clockwise until VTVM reading of 97 to 103 volts is reached. Disconnect generator and VTVM. Tune in a TV station. If sound is distorted SLIGHTLY retouch A7 for undistorted sound with MINIMUM noise.

4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust controls for normal operation. Adjust Fine Tuning until a beat pattern is noted in the picture. Adjust A8 until the horizontal scanning lines are smooth and continuous.

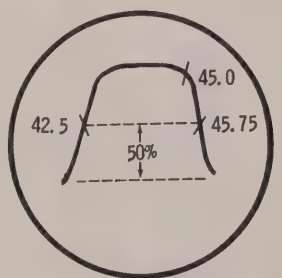


FIG.1

HOFFMAN MODELS B1311, B3501, 11, 21, 31, K1311, K3531, M1311, M3501, 11, 21, 31, SP3501, 31, W3501, 11, 21, 31, (Ch. 339, 341, AP-415, RP-409)

FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF	6BZ6	
V2	2nd Video IF	6BZ6	
V3	3rd Video IF-Video Det.	6AS8	
V4	Video Output-AGC Keying	6AW8A	
V5	Sound IF	6AU6	
V6	Audio Det.	6D7G	
V7	Audio Output	6V8GT	
V8	Sync Sep.-Sync Phase Inv.	12AUTA	

ITEM No	USE	TYPE	NOTES
V9	Vert. Mult.	6CG7	
V10	Vert Output	6W6GT	
V11	Horiz. AFC	6AL5	
V12	Horiz. Mult.	6CG7	
V13	Horiz Output	6DQ6A	
V14	Damper	6AX4GT	
V15	HV Rectifier	1B3GT	1G3GT *
V16	LV Rectifier	5U4GB	

* Alternate.

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	HOFFMAN PART No	GENERAL ELECTRIC PART No	RCA PART No.	SYLVANIA PART No.	
V17	21CBP4A		21CBP4-A ①	21CBP4/ 21CBP4A	① "Silverama" ③ ③ "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP.	RATING VOLT	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	100	350	857104	AFH4-66-60	D0044	FP435.6	TMT-36 TD-100-450	T-111 MTD-4510	TVL8-4635.10*
B	40	350							
C	10	350							
D	10	350							
C2A	100	350	856903	AFH4-66-65	C0230 BR505	FP330.22		T-110 MT-0550	TVL8-3638.12*
B	20	350							
C	50	50							

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	56					C10Q56U	CN7-456	5TCU-Q56S 5% *	N750 5% ①
C4	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C5	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C6	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C7	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C8	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C9	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C10	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C11	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C12	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C13	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C14	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C15	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C16	1000			BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C17	10			NPO-SI 10	D6-100	LT6Q	CNO-410	5TCC-Q10S 10% *	10%
C18	2.2			NPO-SI 2.2	TCZ-2R2	C10V22C	CNO-522	5TCCB-V22S 10% *	10%
C19	47								N150 10%
C20	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C21	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C23	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C24	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C25	.22	200		P288N-22		CUB32P22	GEM-2022	2TM-P22	
C26	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C27	.47	200		P288N-47		CUB32P47	GEM-2047	2TM-P47	
C28	.1	400		P488N-1		CUB43P1	GEM-401	4TM-P1	
C29	47			BPD-000047	DD-470	LJ0Q47	CNO-447	5GA-Q47	
C30	47			BPD-000047	DD-470	LJ0Q47	CNO-447	5GA-Q47	
C31	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C32	4700			BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C33	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C34	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C35	18				TCZ-18	C10Q18C	CNO-418	5TCC-Q18S 10% *	NPO 10%
C36	.047	200		P288N-047		CUB4S47	GEM-4147	4TM-S47	
C37	1000			BPD-001	DD-102	BYA10D1M	B-310	5HK-D1	
C38	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C39	47			BPD-000047	DD-470	LJ0Q47	CNO-447	5GA-Q47	
C40	.0022	400		P488N-0022	D6-222	CUB6D22	GEM-6222	6TM-D22	
C41	220			DI-220	MD-221	LJ0T22	JL-322	5TCC-T22S 10% *	10%
C42	.0047	200		P288N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C43	.0047	600		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C44	.1	600		P688N-1		CUB6P1	GEM-601	6TM-P1	
C45	.1	600		P688N-1		CUB6P1	GEM-601	6TM-P1	
C46	.047	200		P288N-047		CUB32P47	GEM-4147	2TM-P47	
C47	.1	200		P288N-1		CUB2P1	GEM-201	2TM-P1	
C48	.1	400		P488N-1		CUB4P1	GEM-401	4TM-P1	
C49	.047	200		P288N-047		CUB32P47	GEM-4147	2TM-P47	
C50	.001	200		P288N-001	D6-102	CUB6D1	GEM-621	6TM-D1	
C51	.001	200		P288N-001	D6-102	CUB6D1	GEM-621	6TM-D1	
C52	.0047	200		P288N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C53	.047	200		P288N-047		CUB6S47	GEM-6147	6TM-S47	
C54	100			1469-0001		32S5T1	MCB-235	MS-31	10%
C55	3900			1484-0039		1RS139		MS-339	10%
C56	470			1484-00047		5RS747		MS-347	10%
C57	330			1469-00033		5RS733		MS-330	10%
C58	470			BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C59	.001	400		P488N-001	D6-102	CUB4D1	GEM-421	6TM-D1	
C60	.1	400		P488N-1		CUB4P1	GEM-401	4TM-P1	
C61	.047	600		P688N-047		CUB6S47	GEM-6147	6TM-S47	
C62	82	3000			DD30-820		3DY-482	30GAD-Q82S *	
C63	82	3000			DD30-820		3DY-482	30GAR-Q82S *	
C64	.1	600		P688N-1		CUB6P1	GEM-601	6TM-P1	
C65	82	3000			DD30-820		3DY-482	30GAD-Q82S *	
C66	.047	600		P688N-047		CUB6S47	GEM-6147	6TM-S47	

* Not normally in distributors stock. Available thru distributor on order to manufacturer.
① Not used in some versions.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No	MALLORY PART No	INSTALLATION NOTES
R1A	500Ω	½	803021	F1-1	RTV-648	† QJ-1075	†† UE37S1S	Contrast
B	500K			R2-40	Not Req.			Volume
C	Switch			KB-1 or KR-1*	Not Req.		UE17S1S	Vertical Hold
R2A	1.25meg	½	803022				Not Req.	Brightness
B	150K	½					Not Req.	Sync Lock, Pull Type
C	Switch							Height
R3A	2meg	½	800012	BX-75	A47-2meg-S	Bil-139	PTA26L	
B	Shaft			Not Req.	FKB-1/4	TM-2	Not Req.	
R4	2000Ω	2(WW)	806002		39-2000		FL-2.5K	Vert. Linearity
R5A	100K	½	800032	AB-40	A47-100K-S	Bil-128	PTA15L	Area Control
B	Shaft			AK-1	FKB-1/4	BK-3	Not Req.	
R6A	10K	½	800009	AB-14	A47-10K-S	Bil-116	TA14L	Horiz. Drive
B	Shaft			AK-1	FKB-1/4	BK-2	Not Req.	

† "Concentrikit" Equivalent: K-6 Kit , Base Elements & Shafts, Bil-103, P17-126 (Panel) (Not Available as a factory assembled unit) Bil3-133, RI-205 (Rear) 76-2 (Switch)

†† "STA-LOC" Equivalent: FA52L, OF1750, RU55A, 1E2187, U8-42.

* Use KB with CRL "blue label" controls and KR with "red label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	HOFFMAN PART No.	NOTES
R7	470Ω			
R8	47K			
R9	47Ω			
R10	470Ω			
R11	470Ω			
R12	47Ω			
R13	47K			
R14	470Ω			
R15	150Ω			
R16	1000Ω			
R17	12K			
R18	4700Ω			
R19	18K	2		
R20	2.7meg			
R21	100K			
R22	390Ω			
R23	470K			
R24	220K			
R25	4.7meg			
R26	470K			
R27	3900Ω	4		
R28	820Ω	1		
R29	15K			
R30	270K			
R31	100K			
R32	470Ω			
R33	5600Ω	1		
R34	39K			
R35	12K			
R36	820K			
R37	100K			
R38	560K			
R39	820Ω			
R40	270Ω			
R41	1meg			
R42	2.2meg			
R43	330K			
R44	15K			
R45	470K			

ITEM No.	RATING OHMS	RATING WATT	HOFFMAN PART No.	NOTES
R46	2200Ω	1		
R47	2200Ω	1		
R48	1800Ω	1		
R49	2200Ω	1		
R50	470Ω			
R51	4.7meg			
R52	68K	1		
R53	680K	1		
R54	1.2meg			
R55	1000Ω 5%			
R56	5600Ω			
R57	100Ω			
R58	560Ω	1		Note 1
R59	4.7meg			
R60	22K			
R61	100K			
R62	100K			
R63	470K			
R64	4.7meg			
R65	6800Ω			
R66	100K			
R67	100K			
R68	1500Ω 5%			
R69	5600Ω			
R70	1meg			
R71	12K	2		
R72	1000Ω	1		
R73	2.2Ω			
R74	4700Ω			
R75	15Ω	1		
R76	560Ω			
R77	560Ω			
R78	120Ω	10		
R79	2500Ω	10		
R80	2.2meg			
R81	1.5meg			Note 2
R82	330K			
R83	79Ω Cold		834002	
R84	470Ω			

Note 1. Some versions may use 470Ω 1W in this application.
Note 2. Some versions may use 1meg in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA HOFFMAN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	RF Choke	750004					27 Microhenries
L2	1st Video IF	762006	17-4534	TV-131		VF-4	
L3	2nd Video IF	763009	17-4533	TV-130	6219	VF-3	
L4	3rd Video IF	762024					
L5	4th Video IF	760004	17-5004	TV-126	6234		
L6	Series Peaking Coil	T7L004	19-3100	TV-161	6113	VP-3	100 Microhenries
L7	Shunt Peaking Coil	T7L019		TV-307	6156		820 Microhenries
L8	4.5MC Trap	762005	20-1004	TV-151	1469 *	SF-3	* Disregard tap.
L9	Series Peaking Coil	T7L020	19-3250	TV-185	6161	VP-6	250 Microhenries
L10	1st Sound IF	763005	20-1004	TV-151	1469 *		* Disregard tap
L11	2nd Sound IF	760003	17-3495	TV-113	6303	SF-2	
L12	Quadrature Coil	T74001	20-1007	TV-121	1480		

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L13	50Ω		768004	19-1576	TV-163	6210	H-102	HS-5	Horiz. Freq.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L14	Width Coil (2. 7-17MH)	778002	RF800 ①②	MWC-11	5314	201R16	QRC-106	WC-18	WC-18 ①	WLC-6

① Enlarge mounting hole. ② Use terminals #1 and #2.

TRANSFORMER (POWER)

ITEM No	RATING PRI	RATING SEC 1	RATING SEC 2	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.8A	580VCT @ 270A	5V @ 3A	716004		P-3055		P-8335	26R92	
	SEC 3	SEC 4	SEC 5							
	6.3V @ 6A	6.3V @ 9.2A								

TRANSFORMER (REMOTE CONTROL)

ITEM No	RATING PRI	RATING SEC 1	RATING SEC 2	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V @ .5A	27V @ 1.6A		732001 ①						

① Not used in Ch. 339.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T3	Vert. Output	728002	21900 ①	A-3823	V307		A-8143 ②	26S77	A-108X
T4	Yoke-Horiz. (20MH) (90°)-Vert. (39MH)	790003	DF-507 ③	MDF-22 ③	T90T19/43 ③		DY-16A ②	Y-16 ③	Y-41 & NW4
	Rear Cover & Centering Device	964002							
T5	Horiz. Output	782002	FB419 *	HVO-36 *	X094 *	EFR155 *	HO-288*	FLY-16 *	D-91 *

① Use 8 : 1 turns ratio.
② Drill new mounting hole(s).
③ Use original rear cover and centering device. Use original damping network, if necessary.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	8	9	9	9	9	8	9	7
	7	7	7	7	7	7	7	6
	6	5	5	5	5	6	5	5
	3	3	3	3	3	3	3	4
	2	1	1	1	1	2	1	3
Connect Width Coil Across	3 & 2	3 & 1	3 & 1	3 & 1	3 & 1	3 & 2	3 & 1	4 & 3

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA HOFFMAN PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	3-4Ω	708903 ①②	4SA1 ①	① Parallel and phase.
SP2	4" x 6"	PM	3-4Ω	708903 ①②	4SA1 ①	② Used in 3501 Series, 3531 Series.
	10"	PM	3-4Ω	708804 ③	10A31	③ Used in 3511 Series.
	8"	PM	3-4Ω	708801 ④	8A31	④ Used in 3521 Series.
	4"	PM	3-4Ω	708003 ⑤	4A07	⑤ Used in 1311 Series.
	31"	PM		708009 ⑥		⑥ Used in 3501 Series, 3521 Series.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOFFMAN PART No	REPLACEMENT DATA	
X1	Vert. Integrator	2200mmf, 4700mmf, 4700mmf, 22K, 8200Ω, 3200Ω	886001-1	Aerovox Centralab Cornell-Dubilier Sprague	PA-110 PC-100 115TMS V-1

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 125V S/B	954235	956302	313003. (3AG-3A-125V-S/B)	35700L	MDX3	4406

HOFFMAN MODELS B1311, B3501, 11, 21, 31, K1311, K3531, M1311, M3501, 11, 21, 31, SP3501, 31, W3501, 11, 21, 31, (Ch. 339, 341, AP-415, RP-409)

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M2	Lamp	940051	#51
M3	Tuner	710009	VHF Ch. 341
	Tuner	710010	VHF Ch. 339
M4	Switch		Muting, SPST (Leaf Type) Part of Motor Assy.
M5	Switch	908001	Cycle Stop, SPST (Leaf Type)
M6	Switch	900001	Channel, SPST (Slide Type)
M7	Motor	715004	24 Volts, Includes M4

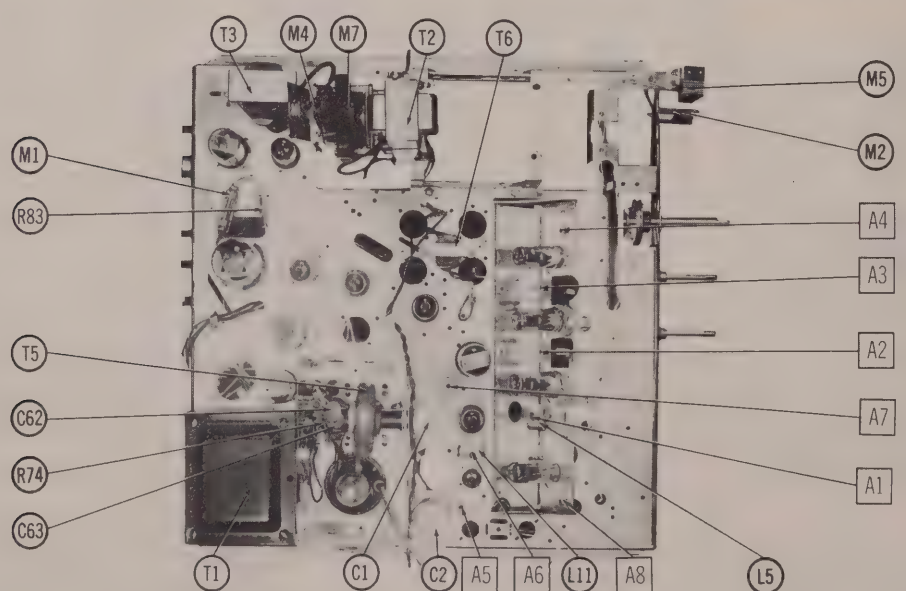
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

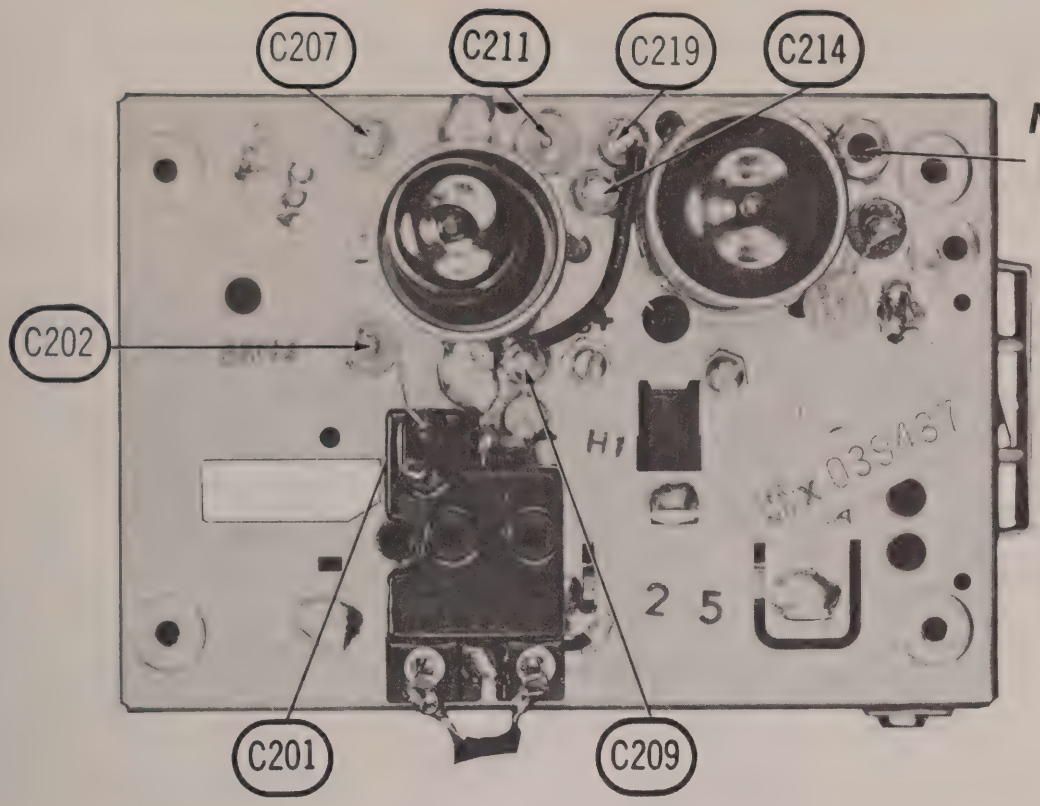
NAME	PART NO.	DESCRIPTION
Safety Glass	428005	Models B352l, B353l, C353l, K353l, M352l, M353l, SP353l, W352l, W353l
Safety Glass	430001	Models B131l, B350l, B351l, K131l, M131l, M350l, M351l, SP350l, W350l, W351l,
Knob	478001	Channel Selector, Model B131l, B350l, B351l, K131l, M131l, M350l, M351l, SP350l, W350l, W351l
Knob	500043 BAR	Channel Selector, Models B352l, B353l, C353l, K353l, M352l, M353l, SP353l, W352l, W353l
Knob	500042	Fine Tuning, Models B352l, B353l, C353l, K353l, M352l, M353l, SP353l, W352l, W353l
Knob	508008	Volume-On-Off, Brightness, Models B131l, B350l, B351l, K131l, M131l, M350l, M351l, SP350l, W350l, W351l
Knob	500044	Volume-On-Off, Brightness, Models B352l, B353l, C353l, K353l, M352l, M353l, SP353l, W352l, W353l
Knob	512011	Contrast, Vert. Hold, Models B131l, B350l, B351l, K131l, M131l, M350l, M351l, SP350l, W350l, W351l
Knob	512015	Contrast, Vert. Hold, Models B352l, B353l, C353l, K353l, M352l, M353l, SP353l, W352l, W353l
Cabinet	346022	Oak, Model B131l
Cabinet	354012	Oak, Model B350l
Cabinet	352037	Oak, Model B351l
Cabinet	352043	Oak, Model B352l
Cabinet	354031	Oak, Model B353l
Cabinet	354038	Cherry, Model C353l
Cabinet	346023	Ebony, Model K131l
Cabinet	354028	Ebony, Model K353l
Cabinet	346021	Mahogany, Model M131l
Cabinet	354011	Mahogany, Model M350l
Cabinet	352036	Mahogany, Model M351l
Cabinet	352042	Mahogany, Model M352l
Cabinet	354030	Mahogany, Model M353l
Cabinet	354013	Salem Maple, Model SP350l
Cabinet	354032	Salem Maple, Model SP353l
Cabinet	354010	Walnut, Model W350l
Cabinet	352035	Walnut, Model W351l
Cabinet	352041	Walnut, Model W352l
Cabinet	354029	Walnut, Model W353l

WIRING DATA

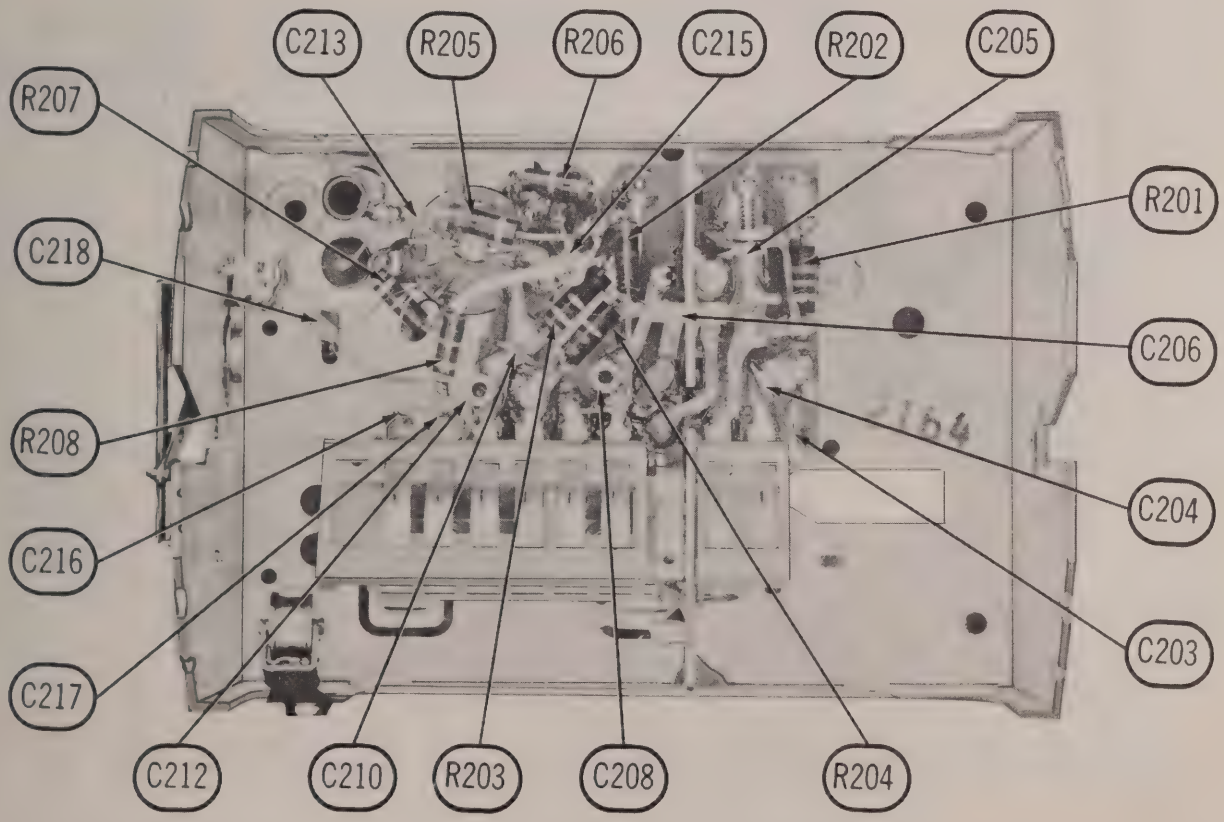
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



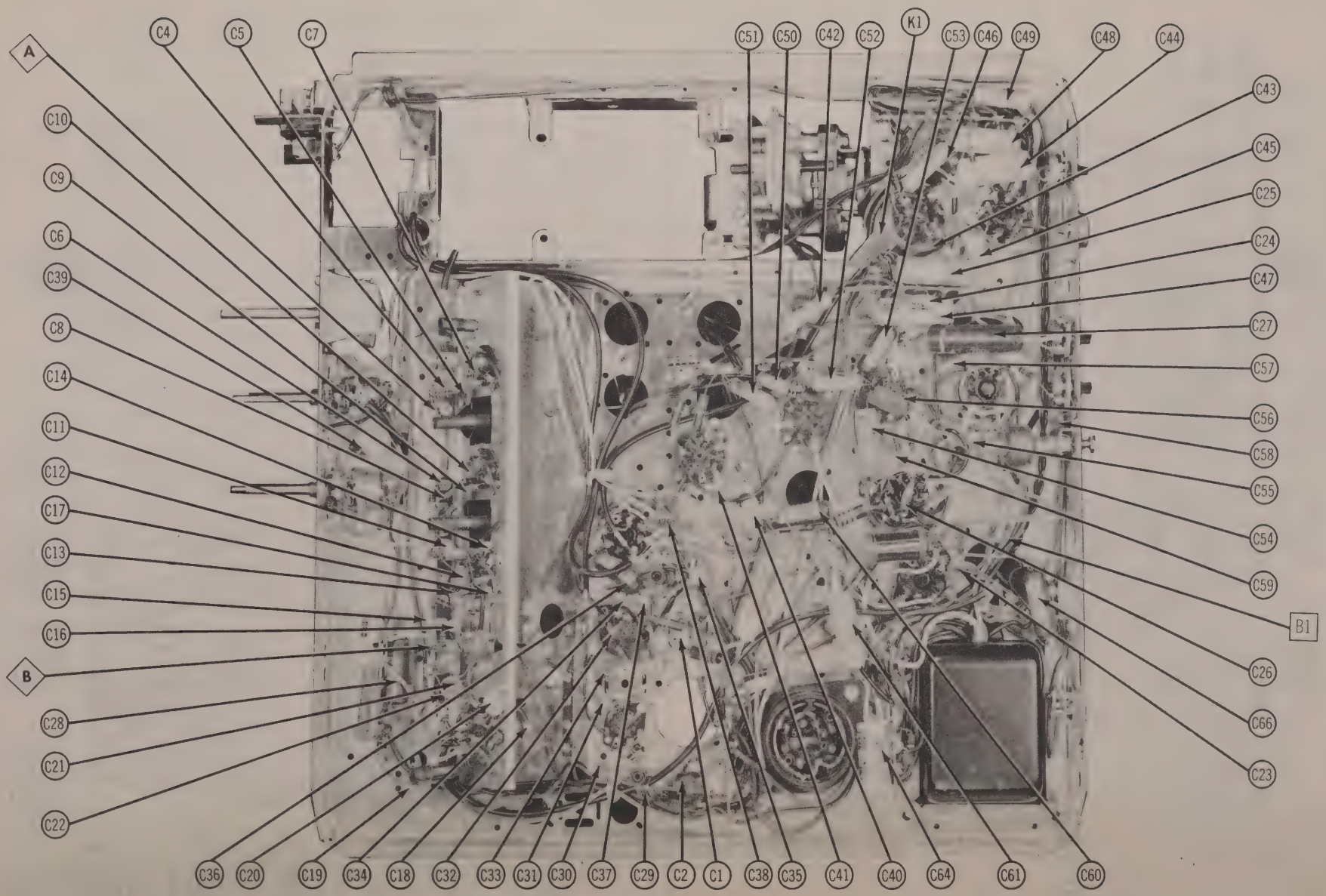
CHASSIS–TOP VIEW



TUNER 710009 - TOP VIEW



TUNER 710009 - BOTTOM VIEW



CHASSIS BOTTOM VIEW - CAPACITOR & ALIGNMENT IDENT

RESISTANCE MEASUREMENTS

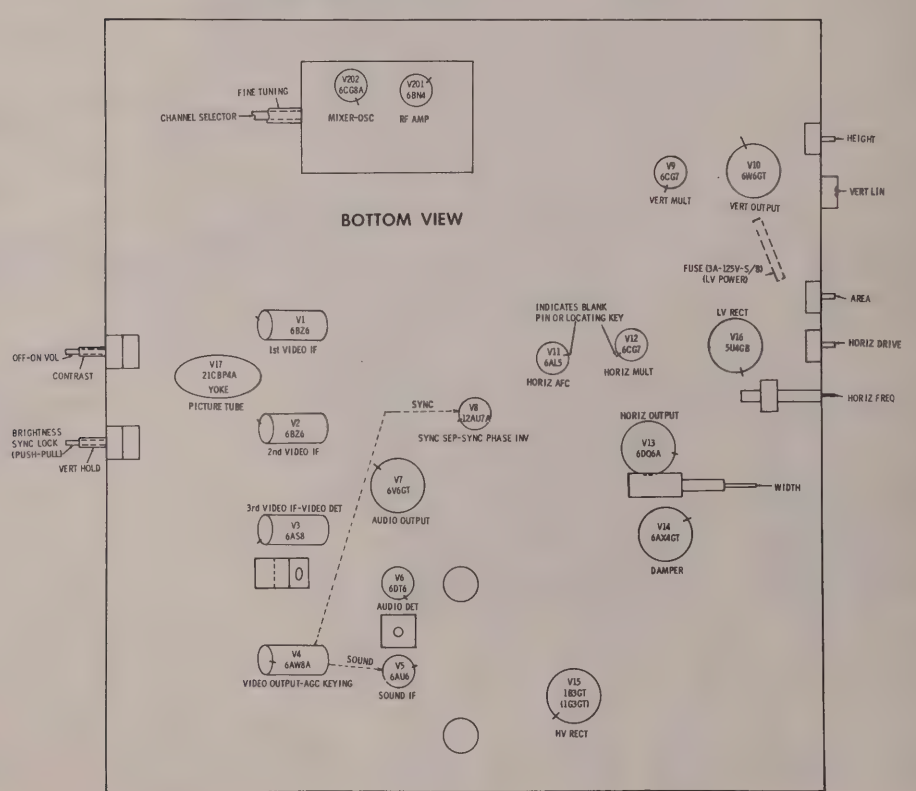
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	100K	47Ω	.1Ω	0Ω	†3100Ω	†3100Ω	0Ω		
V2	6BZ6	100K	47Ω	.1Ω	0Ω	†3100Ω	†3100Ω	0Ω		
V3	6AS8	†3100Ω	.1Ω	150Ω	.1Ω	0Ω	4700Ω	0Ω	.1Ω	†1100Ω
V4	6AW8A	†120Ω	†940Ω	300K	1meg	1meg	230Ω	4700Ω	†18K	†4700Ω
V5	6AU6	100K	0Ω	0Ω	.1Ω	†8200Ω	†30K	0Ω		
V6	6DT6	5Ω	820Ω	.1Ω	0Ω	†820K	†8200Ω	560K		
V7	6V6GT	NC	0Ω	†365Ω	†2600Ω	0Ω	NC	.1Ω	270Ω	
V8	12AU7A	†4500Ω	†470K	4500Ω	0Ω	0Ω	†470K	1.1meg	0Ω	.1Ω
V9	6CG7	†68K	4.7meg	1000Ω	0Ω	.1Ω	†690K	•1.7meg	1000Ω	0Ω
V10	6W6GT	TP	.1Ω	†520Ω	†620Ω	•1.6meg	TP	0Ω	•1100Ω	
V11	6AL5	15Ω	15Ω	.1Ω	0Ω	4.8meg	0Ω	4.8meg		
V12	6CG7	†8000Ω	5.2meg	1500Ω	0Ω	.1Ω	†100K	100K	1500Ω	0Ω
V13	6DQ6A	TP	.1Ω	TP	†12K	1meg	TP	0Ω	6Ω	TOP CAP †17Ω
V14	6AX4GT	TP	NC	INF	NC	†120Ω	NC	0Ω	.1Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †347Ω
V16	5U4GB	NC	¶	NC	18Ω	TP	17Ω	NC	¶	
V17	21CBP4A	0Ω	22K	Pin 6 22K	Pin 10 †10K	Pin 11 •300K	Pin 12 .1Ω			
V201	6BN4	0Ω	300K	0Ω	.1Ω	†4100Ω	0Ω	300K		
V202	6CG8A	3900Ω	†7000Ω	0Ω	0Ω	.1Ω	†4500Ω	†15K	0Ω	220K
ITEM	TYPE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

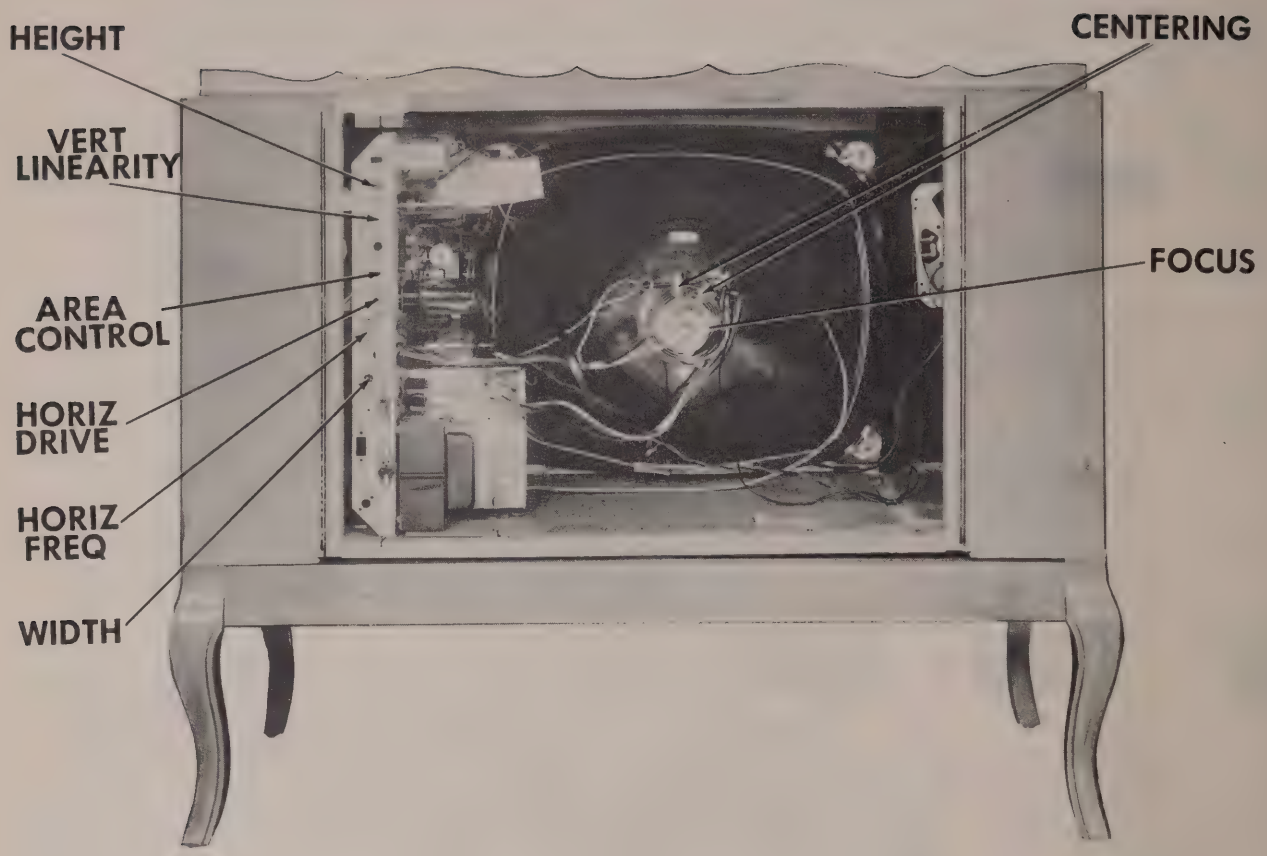
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 255V SOURCE. NC NO CONNECTION.

‡ MEASURED FROM PIN 3 OF V14. TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive (R6) until white line disappear.

If the Horizontal Drive was adjusted, tune in a TV station and repeat above procedure. Check horizontal sync by switching off channel and back again.

Adjust the Width slug (B1) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

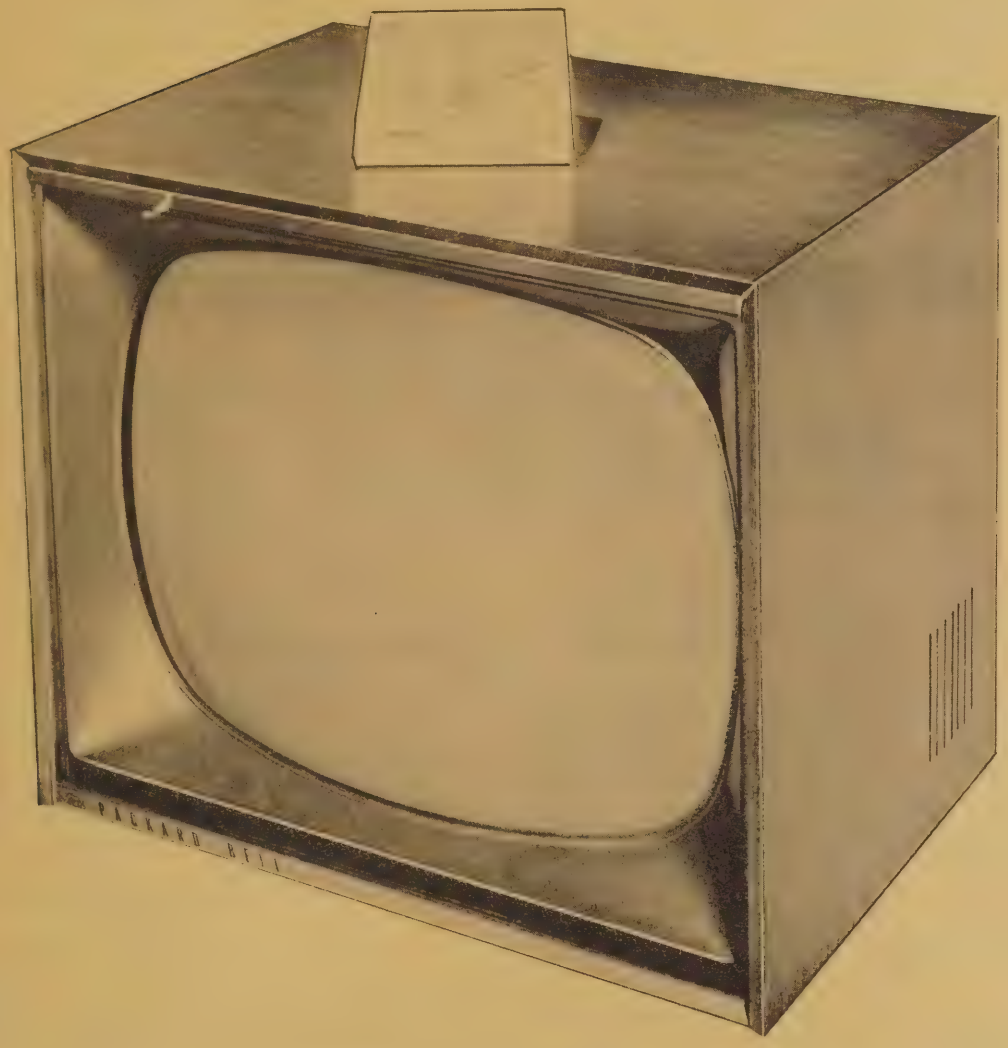
PACKARD-BELL MODELS 17VT7, 21VT5 (Ch. V8-4, RM-200, RM-201)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

PACKARD-BELL MODELS 17VT7, 21VT5 (Ch. V8-4, RM-200, RM-201)



MODEL 21VT5 (Ch. V8-4, RM-201)

PACKARD-BELL MODELS 17VT7, 21VT5 (Ch. V8-4, RM-200, RM-201)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PHOTOFACT* Folder

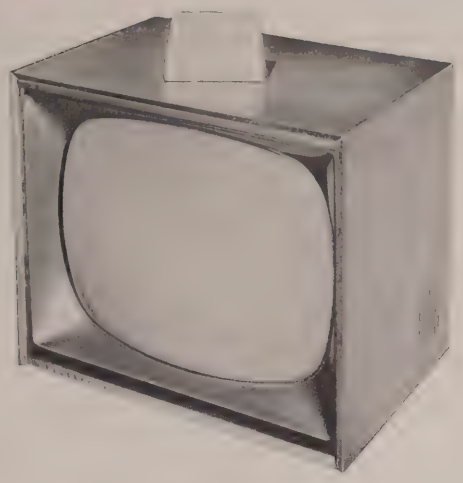
EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

PACKARD-BELL MODELS 17VT7, 21VT5 (Ch. V8-4, RM-200, RM-201)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove Remote Control plugs.
2. Remove 6 wood screws holding rear cover.
3. Remove rear cover.
4. Remove speaker leads.
5. Remove 4 bottom chassis bolts.
6. Remove 1 metal screw holding top support bracket.
7. Remove chassis.



MODEL 21VT5 (Ch. V8-4, RM-201)

TRADE NAME	Packard-Bell	MODELS	CHASSIS
		17VT7	RM-200 & V8-4
		21VT5	RM-201 & V8-4
MANUFACTURER	Packard-Bell Co. -Service Div., 11th & Hope Streets, Los Angeles 15, Calif.		
TUBES	Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	OFF 4 Watts, .2 Amp. @ 117 Volts AC TV 175 Watts, 1.6 Amp. @ 117 Volts AC Tuning 200 Watts, 1.9 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF Oscillator it is necessary to remove the chassis from the cabinet. (See disassembly instructions).

SAFETY GLASS REMOVAL

Remove 3 wood screws holding metal trim at bottom of the safety glass. Remove safety glass.

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
The focus may be varied by means of a Focus control. (For location, see tube placement chart.)

C. Pix Lock
The Pix Lock control is normally set almost fully counterclockwise. Adjust picture to lock in with hold control. If picture jitters, tears, etc., adjust Pix Lock clockwise until stable. Readjust hold controls and check operation on all channels in the area.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A11) located on bottom of chassis.

FUSE DEVICE

An 18Ω fusible resistor (R94) is used for low voltage power supply protection and 2 fuse wires for filament protection.

CENTERING

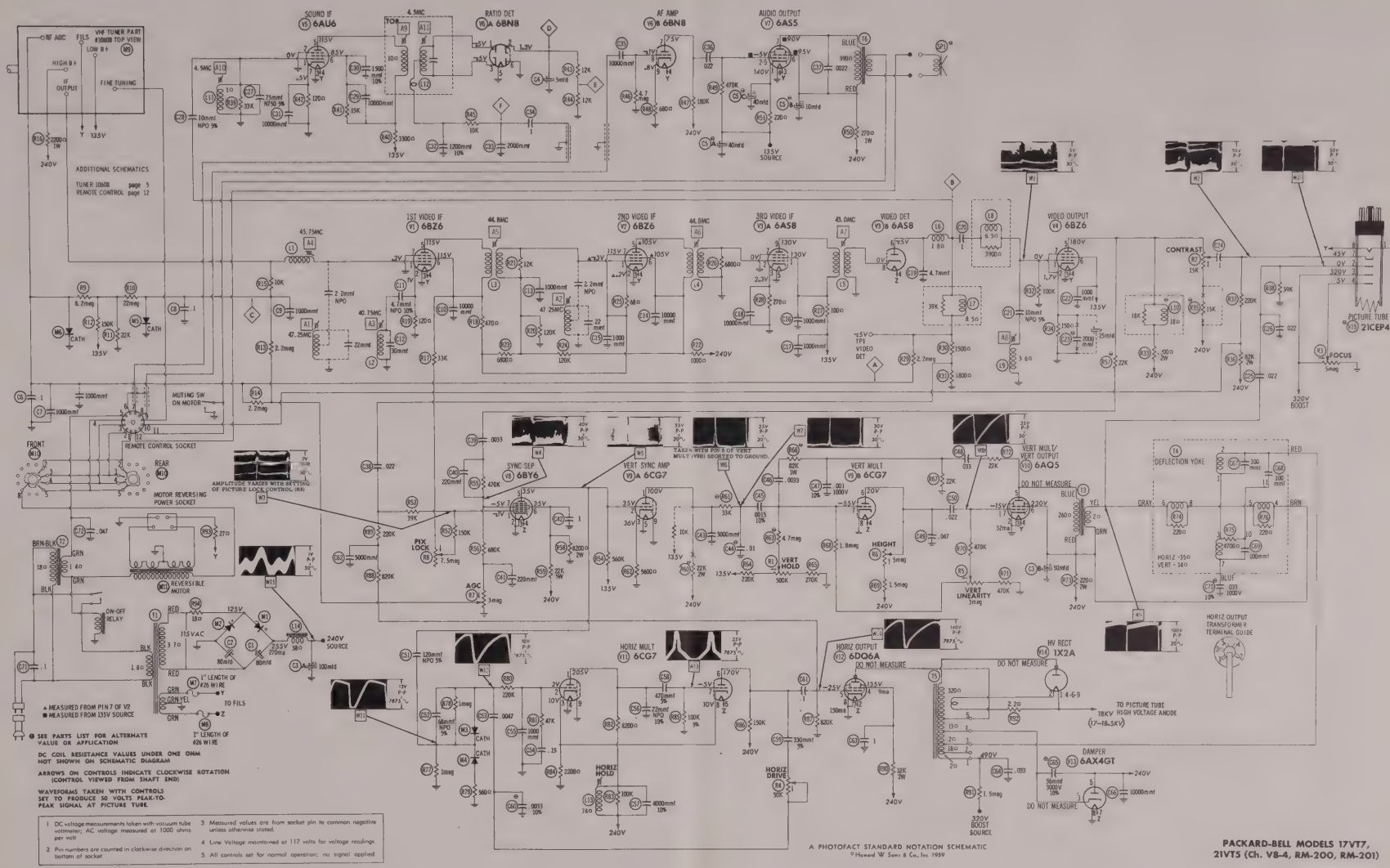
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H980

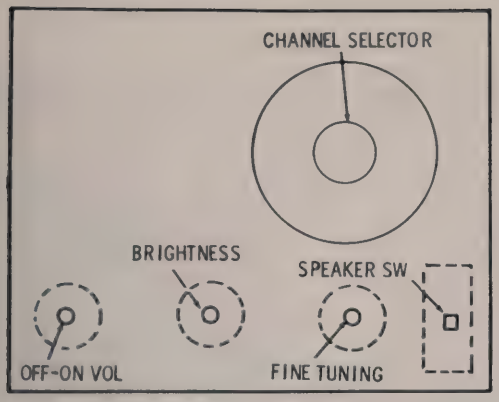
PACKARD-BELL MODELS 17VT7, 21VT5 (Ch. V8-4, RM-200, RM-201)
SET 430 FOLDER 2


SOUND IF 6AU6
RATIO DET 6BN8
AF AMP 6BN8
AUDIO OUTPUT 6AS5
1ST VIDEO IF 6BZ6
2ND VIDEO IF 6BZ6
3RD VIDEO IF 6AS8
VIDEO DET 6AS8
VIDEO OUTPUT 6BZ6
SYNC SEP 6BY6
VERT SYNC AMP 6CG7
VERT MULT 6CG7
VERT MULT/ VERT OUTPUT 6AQ5
HORIZ MULT 6CG7
HORIZ OUTPUT 6DQ6A
HV RECT 1X2A
DAMPER 6AX4GT
PICTURE TUBE 21CEP4
CONTRAST
FOCUS
HEIGHT
VERT LINEARITY
VERT HOLD
HORIZ HOLD
HORIZ DRIVE
PIX LOCK
AGC
MUTING SW ON MOTOR
REMOTE CONTROL SOCKET
MOTOR REVERSING POWER SOCKET
REVERSIBLE MOTOR
ON-OFF RELAY
DEFLECTION YOKE
HORIZ OUTPUT TRANSFORMER TERMINAL GUIDE
TO PICTURE TUBE 18KV HIGH VOLTAGE ANODE (17-18.5KV)
240V BOOST SOURCE
320V BOOST
135V SOURCE
DO NOT MEASURE
ADDITIONAL SCHEMATICS
TUNER 10608 page 5
REMOTE CONTROL page 12
A MEASURED FROM PIN 7 OF V2
■ MEASURED FROM 135V SOURCE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated.
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation; no signal applied

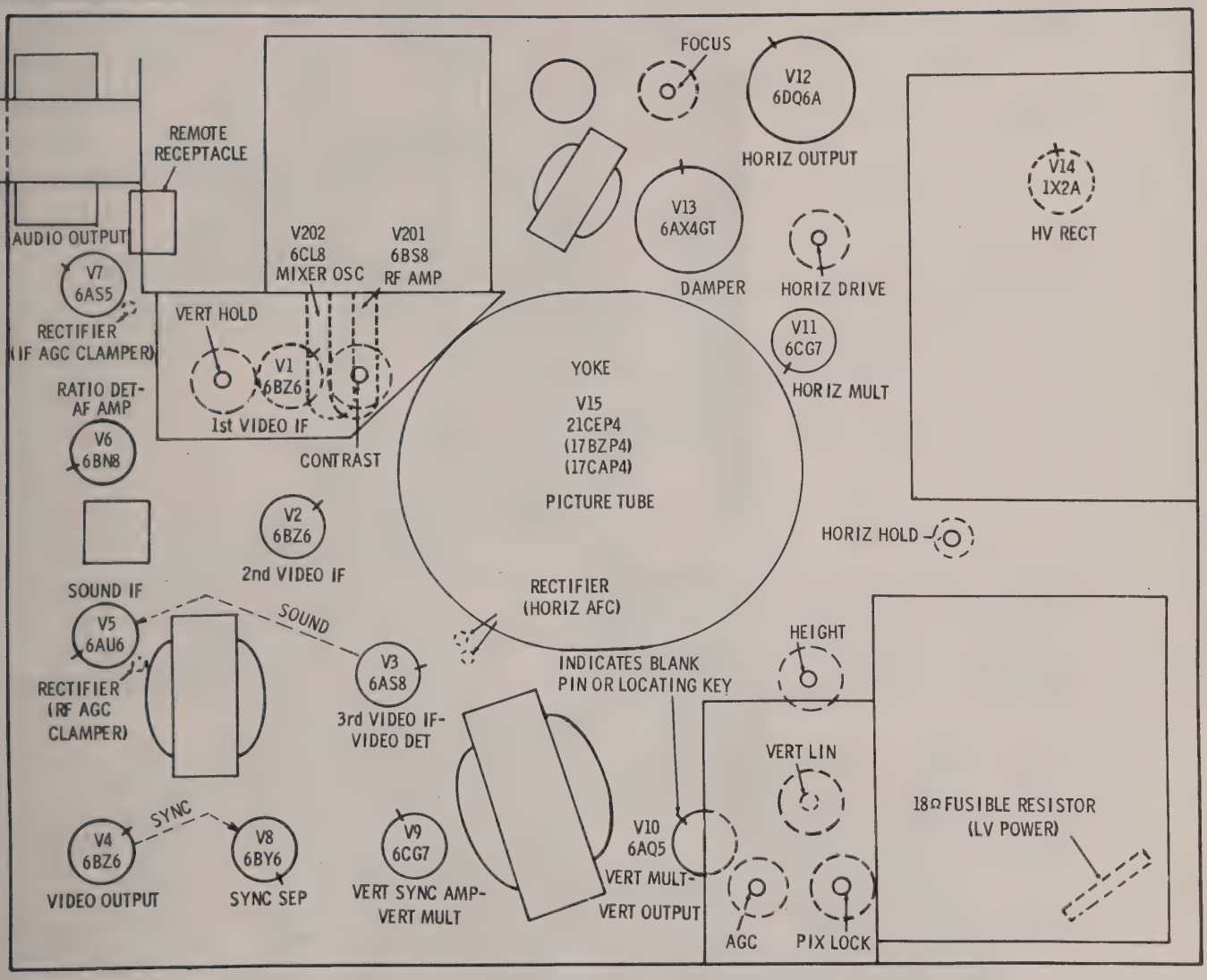
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W Sams & Co, Inc 1959

PACKARD-BELL MODELS 17VT7,
21VT5 (Ch. V8-4, RM-200, RM-201)

TUBE PLACEMENT CHART



TOP VIEW



PACKARD-BELL MODELS 17VT7, 21VT5 (Ch. V8-4, RM-200, RM-201)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

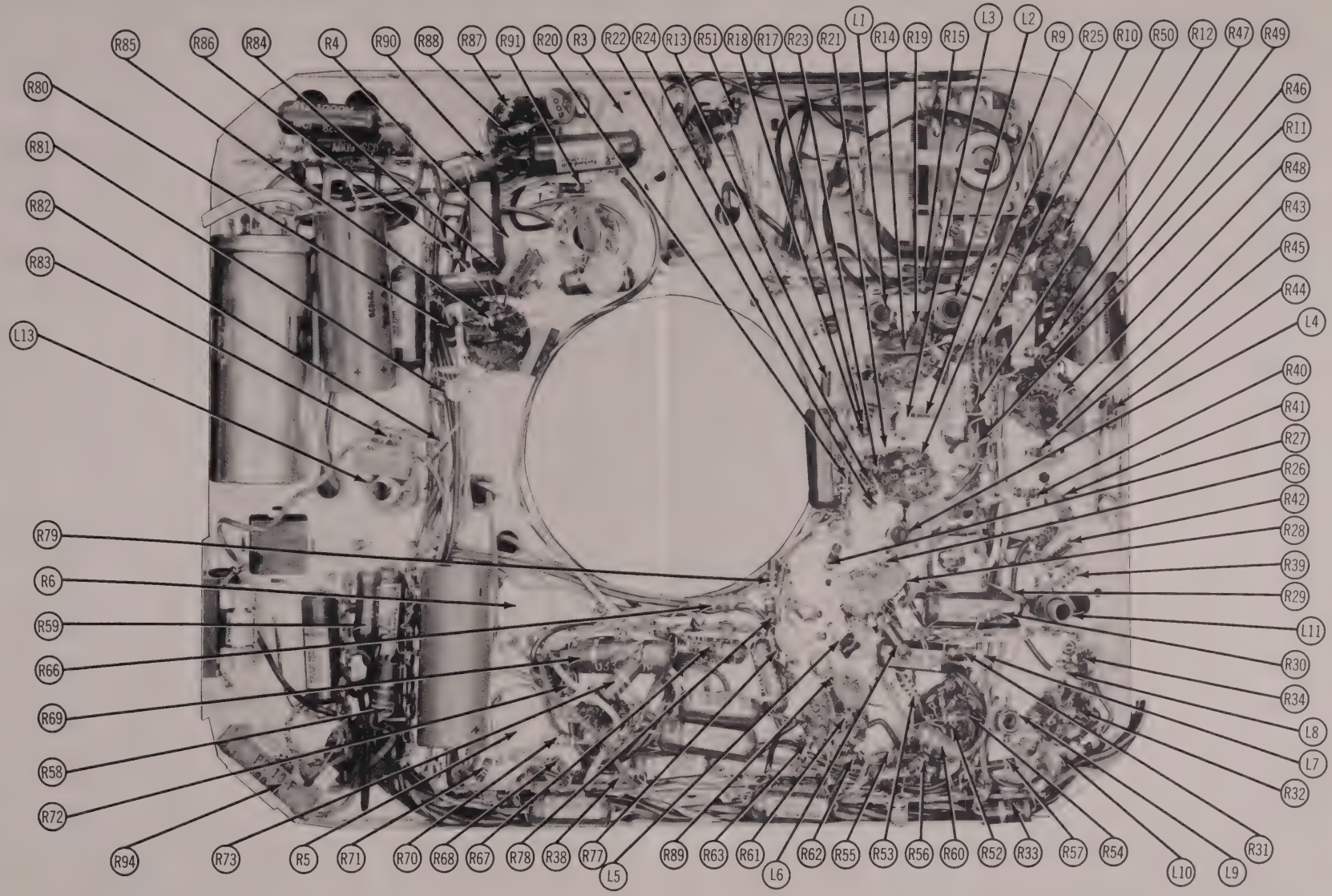
POWER SUPPLY FAILURE
No raster, no sound — Fusible Resistor (18Ω), F1l Fuse Wires, Rects (B+)

SWEEP FAILURE
No raster, has sound — Rectifiers (Horiz. AFC), V11, V12, V13, V14, V15
No vertical deflection — V9, V10
Poor vert. linearity or foldover — V9, V10
Poor horiz. linearity or foldover — V11, V12, V13
Narrow picture — V11, V12, V13, Rectifiers (B+)
Vert. off freq. — V9, V10
Horiz. off freq. — V11

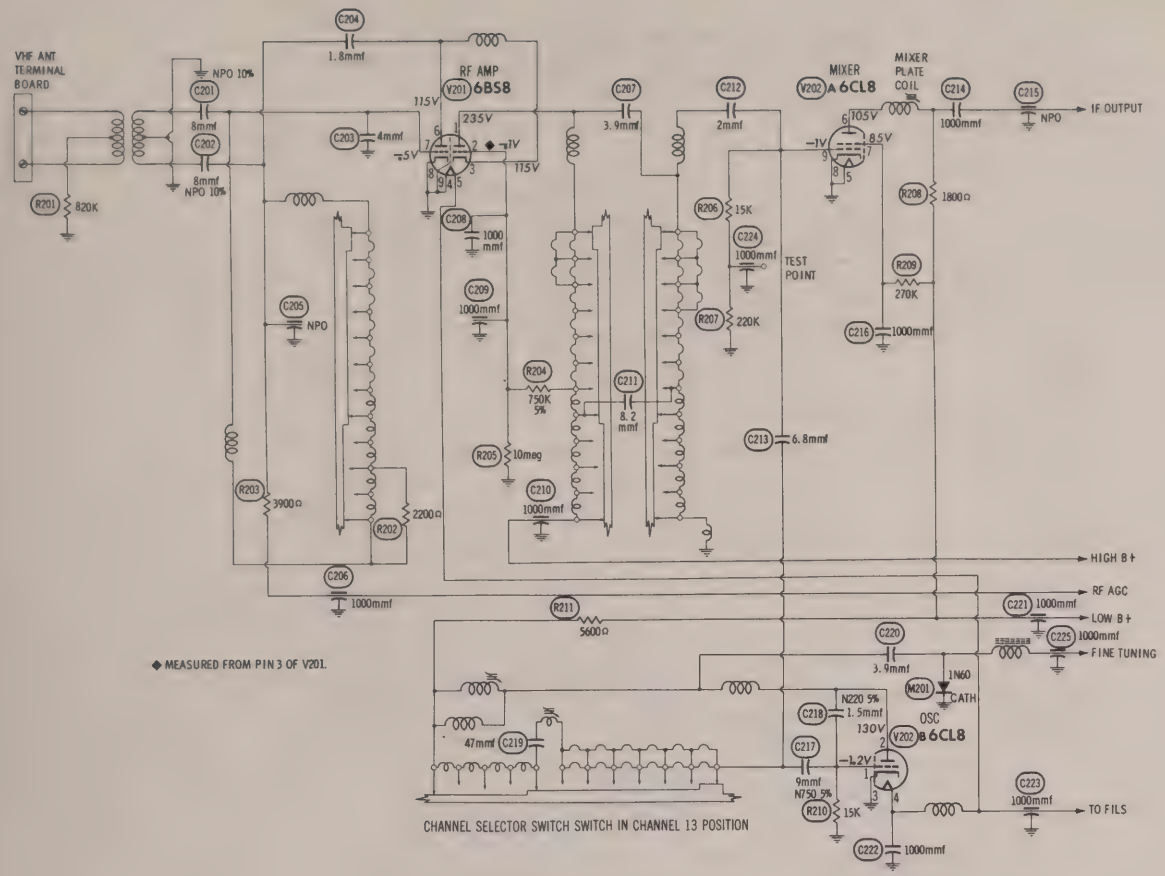
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster — V1, V2, V3
No pic, no sound, has snow — V201, V202, V1
No pic, has sound, has raster — V3, V4, V15
Has pic, no sound — V5, V6, V7
Overloaded picture — Rectifiers (RF & IF AGC Clampers)

SYNC FAILURE
No vert. sync — V8, V9
No horiz. sync — V8, Rectifiers (Horiz. AFC)
No vert. or horiz. sync — V8

FOLDER 2



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

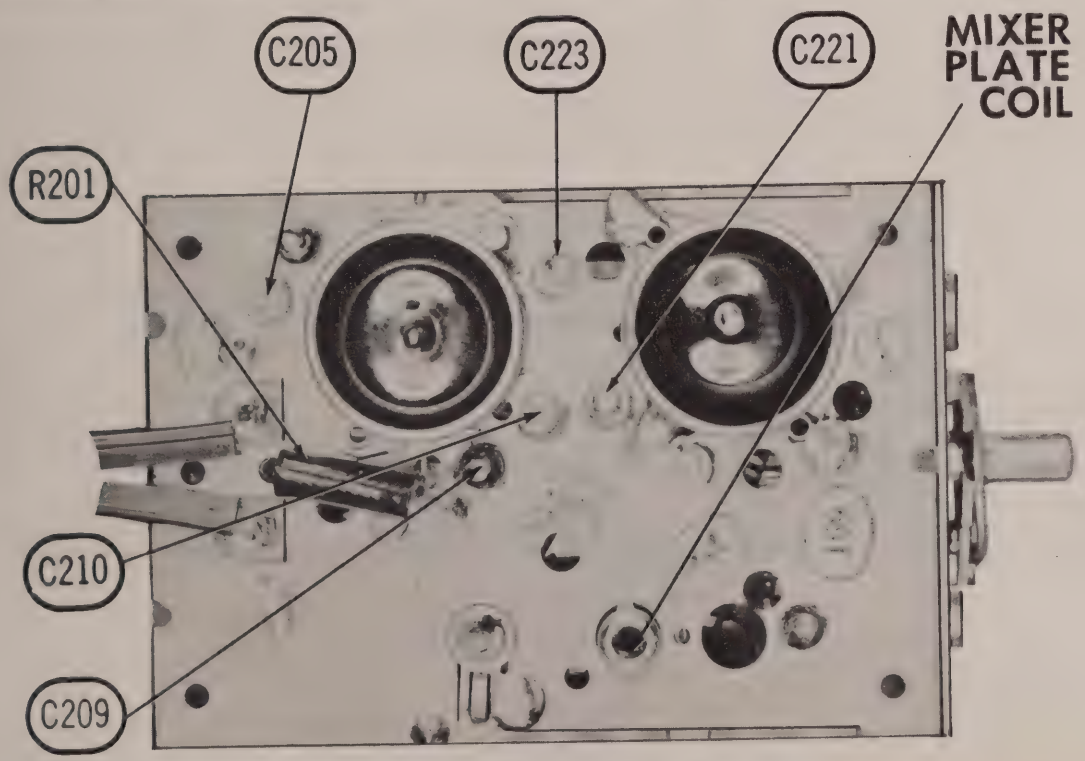


◆ MEASURED FROM PIN 3 OF V201.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

VHF TUNER 10608



TUNER 10608 - TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

10608

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BS8	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CL8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	8				DD-080	C10V8C		5TCCB-V8S 10%*	NPO 10%
C202	8				DD-080	C10V8C		5TCCB-V8S 10%*	NPO 10%
C203	4			DI-5		C10V4C		5TCCB-V4S	
C204	1.8							5TCCB-V18S*	
C205									NPO
C206	1000			EF-001	MFT-1000			503C-D1	
C207	3.9							5TCCB-V39S*	
C208	1000			BPD-001	DD-102	BYA10D1M	B-210	5GA-D1	
C209	1000			EF-001	MFT-1000			503C-D1	
C210	1000			EF-001	MFT-1000			503C-D1	
C211	8.2			NPO-SI 8.2		C10V82C	CNO-410	5TCCB-V82S*	
C212	2					C10V2C		5TCCB-V2S*	
C213	6.8			NPO-SI 6.8	TCZ-6R8	C10V68C	CNO-568	5TCCB-V68	
C214	1000			BPD-001	DD-102	BYA10D1M	B-210	5GA-D1	
C215									NPO
C216	1000			BPD-001	DD-102	BYA10D1M	B-210	503C-D1	
C217	9							5TCUB-V9S	N750 5%
C218	1.5								N220 5%
C219	47			DI-47	DD-470	L10Q47	UC-5447	5GA-Q47	
C220	3.9							5TCC-V39S	
C221	1000			EF-001	MFT-1000			503C-D1	
C222	1000			BPD-001	DD-102	BYA10D1M	B-210	5GA-D1	
C223	1000			EF-001	MFT-1000			503C-D1	
C224	1000			EF-001	MFT-1000			503C-D1	
C225	1000			EF-001	MFT-1000			503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Packard-Bell PART No.	NOTES
	OHMS	WATT		
R201	820K			
R202	2200Ω			
R203	3900Ω			
R204	750K 5%			
R205	10meg			
R206	15K			

ITEM No.	RATING		Packard-Bell PART No.	NOTES
	OHMS	WATT		
R207	220K			
R208	1800Ω			
R209	270K			
R210	15K			
R211	5600Ω			

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Packard-Bell PART No.	CBS PART No.	SYLVANIA PART No.	
M201	1N60		1N60	1N60	VHF Fine Tuning (Pigtail)

TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

Suggested alignment tools: General Cement #8282, 8606, 8606L, 9091
Walsco #2526, 2541, 2543, 2544

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for High band adjustment is located at 2 o'clock, and should be adjusted first. The Low band adjustment is located at 6 o'clock. Adjust for best sound and picture.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A1 thru A8, A10 ..... General Cement #8606, 8606L, 8282, 9295
Walsco #2526, 2543, 2544, 2545
A9, A11 ..... General Cement #8721, 8722
Walsco #2519

VIDEO IF ALIGNMENT

Adjust the generator output to maintain -1.5 to -2 volts on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.001mfd	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	47.25MC (Unmod)	Any non-interfering channel	DC probe to point (A). Common to chassis.	A1, A2	Adjust for MINIMUM deflection. NOTE: These traps not used in some versions.
2.	"	"	40.75MC	"	"	A3	Adjust for maximum deflection.
3.	"	"	42.5MC	"	"	Mixer Plate Coil	"
4.	"	"	45.75MC	"	"	A4	"
5.	"	"	44.8MC	"	"	A5	"
6.	"	"	44.0MC	"	"	A6	"
7.	"	"	43.0MC	"	"	A7	Adjust for maximum deflection. Repeat steps 2 thru 7.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
If separate marker generator is used, connect high side to grounded Mixer-Osc. tube shield. Leave low side disconnected.
Connect the negative lead of a 5mfd 50volt electrolytic capacitor to point (A). Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	63MC (10MC Swp)	40.75MC 41.25MC 42.5MC 43.0MC 45.0MC 45.75MC	3	Vert. Amp. thru 22K to TP1. Low side to chassis. (Across Video Det. load)		Adjust sweep generator output to develop -1.5 volts at point (A). Adjust AGC control to develop -4.5 volts at point (C). Check for response similar to Fig. 1 with markers as shown. The Mixer Plate Coil affects the overall bandwidth, A4 places the 45.75MC marker, A5 places the 45.0MC marker, A7 places the 41.25MC marker, and A3 places the 40.75MC marker on the curve. NOTE: 45.0MC marker must not exceed 97% on channel 3 or picture may smear on higher channels.

4.5MC TRAP ALIGNMENT

Turn the Contrast control fully clockwise.
If a 4.5MC signal generator of crystal accuracy capable of at least one volt output is not available, tune in a TV station and adjust A8 for MINIMUM 4.5MC beat interference in the picture.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001mfd	High side to point (B). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 7 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.005mfd	High side to TP1. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (D). Common to chassis.	A9, A10	Adjust for maximum deflection.
11.	"	"	"	"	DC probe to point (E). Common to point (F).	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

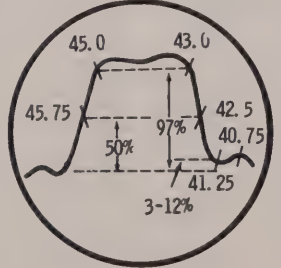


FIG.1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF	6BZ6	
V2	2nd Video IF	6BZ6	
V3	3rd Video IF - Video Det.	6AS8	
V4	Video Output	6BZ6	
V5	Sound IF	6AU6	
V6	Ratio Det. -AF Amp.	6BN8	
V7	Audio Output	6AQ5	
V8	Sync Sep.	6BY8	
V9	Vert. Sync Amp. - Vert. Multi.	6CG7	
V10	Vert. Mult. - Vert. Output	6AQ5	
V11	Horiz. Mult.	6CG7	
V12	Horiz. Output	6DQ6A	
V13	Damper	6AX4GT	
V14	HV Rect.	1X2A	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: Packard-Bell PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	NOTES
V15	21CEP4 17BZP4 17CAP4	17CKP4 ① 17CKP4 ②	21CEP4 ③ 17BZP4 ③	21CEP4 ③ 17BZP4/17CAP4 ③	① "Aluminized" ② "Silverama" ③ ③ "Silver Screen 65"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	80	175	24153	PRS450V80	BR8035	TC80	TD-80-350	MT-4580	TVA-1716
C2	80	175	24153	PRS450V80	BR8035	TC80	TD-80-350	MT-4580	TVA-1716
C3A	≤100	350	24153	AFH2-64-25	B9483	FP347	TMB-61	D-177	TVL-2639
B	≤50	350					TD-50-450		
C4	5	50	24038	PRS50V5	BBR5-50	TC50	TD-5-50	MT-0504	TVA-1303
C5A	40	200	24110 ①	AFH2-114-40	CXB0244	FP327.5	TMD-37	D-115	TVL8-3410.5*
B	≤10	350			BR1045		TD-10-450	MT-4510	
C	≤40	200							

① Alternate Part #24410. * Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	.1	200	23107	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C7	1000		23860	BPD-001	BYA10DM	B-210	5HK-DI		
C8	.1	200	23107	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C9	1000		23860	BPD-001	BD-102	BYA10DM	B-210	5HK-DI	
C10	10000		23939	BPD-01	BD-103	BYA10SI	B-110	5HK-SI	
C11	4.7		23978	NPO-47 4.7	TCZ-4R7	CTA6V4TC	CNO-547	5TCCB-V47B 10%	NPO 10%
C12	30			1469-00003		22R5Q3		MS-43	
C13	1000		23860	BPD-001	BD-102	BYA10DM	B-210	5HK-DI	
C14	10000		23939	BPD-01	BD-103	BYA10SI	B-110	5HK-SI	
C15	1000		23860	BPD-001	BD-102	BYA10DM	B-210	5HK-DI	
C16	1000		23860	BPD-001	BD-102	BYA10DM	B-210	5HK-DI	
C17	1000		23860	BPD-001	BD-102	BYA10DM	B-210	5HK-DI	
C18	10000		23939	BPD-01		BYA10SI	B-110	5HK-SI	
C19	4.7		23753	NPO-47 4.7	TCZ-4R7	CTA6V4TC	Z7-5547	5TCCB-V47	
C20	.1	200	23107	P288N-1	DF-104	CUB2P1	GFM-201	2TM-P1	
C21	10		23636		DTZ-10		CNO-410	5TCC-Q1S 5% *	NPO 5%
C22	1000		23860	BPD-001	BD-102	BYA10 DI	B-210	5HK-DI	
C23	2000			BPD-002	BD-202	BYB6SI	B-320	5HK-D2	②
C24	.1	400	23126	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C25	.022	600	23141	P688N-022	BD-203	CUB6S22	GEM-6122	6TM-S22	
C26	.022	600	23141	P688N-022	BD-203	CUB6S22	GEM-6123	6TM-S23	
C27	75				DTZ-75			5TCU-Q75S 5% *	N750 5%
C28	10		23636		DTZ-10		CNO-510	5TCC-Q1S 5% *	NPO 5%
C29	10000		23939	BPD-01	BD-103	BYA10SI	B-110	5HK-SI	
C30	1500		23639	DI-1500		L10DI5	JL-2I5	5GA-T15S 10% *	10%
C31	10000		23939	BPD-01	BD-103	BYA10SI	B-110	5HK-SI	
C32	1300		23889	DI-1201		L10DI3	JL-2I3	5GA-D13S 10% *	10%
C33	2000		23974	BPD-002	BD-202	BYA10D2	B-220	5HK-D2	
C34	.1	200	23107	P288N-1	DF-104	CUB2P1	GEM-201	2TM-DI	
C35	10000		23939	BPD-01	BD-103	BYA10SI	B-110	5HK-SI	
C36	.022	600	23141	P688N-022	BD-203	CUB6S22	GEM-6122	6TM-S22	
C37	.0022	600	23135	P688N-0022	DD-222	CUB6D22	GEM-6222	6TM-D22	
C38	.022	400	23123	P488N-022	DD-203	CUB4S22	GEM-6122	4TM-S22	
C39	.0033	400	23117	P488N-0033	DD-332	CUB4D33	GEM-6233	6TM-D33	
C40	220		23915	DI-220	DD-221	L10T22	B-322	5GA-T22	
C41	220		23915	DI-220	DD-221	L10T22	B-322	5GA-T22	
C42	.1	200	23107	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C43	5000		23931	BPD-005	BD-502	BYA10D5	B-250	5HK-D5	
C44	.01	600	23139	P688N-01	DD-103	CUB6S	GEM-611	6TM-S	①
C45	.0015	400	23315					5BF-D15	10%
C46	.0033	400	23117	P488N-0033	DD-332	CUB6D33	GEM-6233	6TM-D33	
C47	.001	1000	23753					10TM-D1S 10% *	10%
C48	.033	600	23142	P688N-033	DD-333	CUB6S33	GEM-6133	6TM-S33	
C49	.047	600	23143	P688N-047	DD-473	CUB6S47	GEM-6147	6TM-S47	
C50	.022	600	23141	P688N-022	DD-203	CUB6S22	GEM-6122	6TM-S22	
C51	120		23903		DTZ-120		CNO-312	5TCC-T12S 5% *	NPO 5%
C52	68		23992		DTZ-68		CNO-468	5TCC-Q68S 5% *	NPO 5%
C53	.0047		23137	P688N-0047	DD-472	CUB6D47	GEM-6247	6TM-D47	
C54	.15	200	23108	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C55	1000		23860	BPD-001	BD-102	BYA10DM	B-110	5HK-DI	
C56	22		23805	NPO-DI 22	DTZ-22	C10Q22C	CNO-422	5TCC-Q22S 10% *	NPO 10%
C57	4000		23206	1464-004		1W5D4	MCB-463	MS-24	10%
C58	470		23236	1469-00047		5W5T47		MS-347	5%
C59	330		23232	1469-00033		5W5T33		MS-333	5%
C60	.0033	400	23117					5BF-D33	10%
C61	.1	200	23161	P688N-022	DF-303	CUB6S22	GFM-6122	6TM-S22	①②
C62	5000		23931	BPD-005	BD-502	BYA10D5	B-250	5HK-D5	
C63	.1	600	23145	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C64	.033	600	23142	P688N-033	DF-303	CUB6S33	GEM-6133	6TM-S33	
C65	56	3000	23646		DD-560			30GAB-Q56S 10%	10% ③④
C66	10000		23939	BPD-01	BD-103		BYA10SI	B-110	5HK-SI
C67	100			SI 100	D6-101		LT6T1	UC-531	5GA-T1
C68	100			SI 100	D6-101		LT6T1	UC-531	5GA-T1
C69	100			SI 100	D6-101		LT6T1	UC-531	5GA-T1
C70	.033	1000	23073						10TM-S33S 10% *	10% ③④
C71	.1	600	23745	P688N-1	DF-104		CUB6P1	GEM-601	6TM-P1
C72	.047	200	23105	P288N-047	DF-503		CUB3S47	GEM-4147	3TM-S47

① Some versions may use .0047mfd ② 800V in this application.
③ Some versions may use .022mfd④ 600V in this application (Part #23141).
④ 12" Models use 1500mmf 10% ⑤ 2500V in this application (Part #23609).
⑤ 12" Models use .068mfd 10% ⑥ 1000V in this application (Part #23073).
⑥ Not used in some versions.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Packard-Bell PART No	CENTRALAB PART No	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	25972	AB-S9	B47-500K-S	B11-133	PTA56L	Vert. Hold
B	Shaft			AK-19	Not Req.	TM-3	Not Req.	
R2A	15K	½	25965A	AB-20	A47-15K-S	B11-118	TA153L	Contrast
B	Shaft			AK-19	RN-3	TM-3	Not Req.	
R3A	5meg	½	25910	AB-S7	B47-5meg-S	QI-141	PTA56L	Focus
B	Shaft			AK-19	Not Req.	RQ	Not Req.	
R4A	50K	½	25908	AB-31	B47-50K-S	BI1-123	PTA54 L	Horiz. Drive
B	Shaft			AK-19	Not Req.	TM-1	Not Req.	
R5A	3meg	½	25867	AB-S4	B47-3meg-S	QI-140	TA36L	Vert. Lin.
B	Shaft			AK-1	Not Req.	RQ	Not Req.	
R6A	5meg	½	25910	AB-S7	B47-5meg-S	QI-141	PTA56L	Height
B	Shaft			AK-19	Not Req.	RQ	Not Req.	
R7A	3meg	½	25867	AB-S4	B47-3meg-S	QI-140	TA36L	AGC
B	Shaft			AK-1	Not Req.	RQ	Not Req.	
R8A	7.5meg	½	25911	AB-S8	B47-7.5meg-S	BII-143	PTA75L	Pix Lock
B	Shaft			AK-19	Not Req.	TM-1	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	RATING: WATT	Packard-Bell PART No.	NOTES
R9	8.2meg		73072	
R10	22meg		73077	
R11	22K		73041	
R12	150K		73051	
R13	2.2meg		73065	
R14	2.2meg		73185	
R15	10K		73037	
R16	2200Ω	1	73239	
R17	33K		73043	
R18	470Ω		73021	
R19	120Ω		73014	
R20	120K		73050	
R21	12K		73038	
R22	1000Ω		73025	
R23	68000Ω		73035	
R24	120K		73050	
R25	68Ω		73011	
R26	68000Ω		73035	
R27	100Ω		73013	
R28	270Ω		73018	
R29	2.2meg		73185	
R30	15000Ω		73027	
R31	1800Ω		73026	
R32	100K		73049	
R33	82000Ω		73435	
R34	150Ω		73015	
R35	15K			Note 1
R36	62K	2	73448	
R37	220K		73153	
R38	39K		73044	
R39	33K		73043	
R40	3300Ω		73031	
R41	15K		73039	
R42	200Ω		73014	
R43	12K		73038	
R44	12K		73038	
R45	10K		73037	
R46	4.7meg		73169	
R47	180K		73052	
R48	680Ω		73023	
R49	470K		73187	
R50	270Ω	1	73218	
R51	220Ω		73017	
R52	150K		73051	
R53	39K		73044	
R54	560K		73056	
R55	470K		73157	
R56	680K		73069	
R57	22K		73041	Note 2
R58	8200Ω	2	73436	
R59	22K	5	73650	
R60	22K	2	73441	Note 3
R61	33K		73043	Note 4
R62	5600Ω		73034	
R63	4.7meg		73069	Note 5
R64	220K		73063	
R65	270K		73054	
R66	82K	1	73048	Note 6
R67	22K		73041	
R68	1.8meg		73064	
R69	1.6meg		73283	
R70	470K		73057	
R71	470K		73057	
R72	22K		73041	
R73	2200Ω	2	73417	
R74	220Ω		73017	
R75	4700Ω			
R76	220Ω		73017	
R77	1meg		73061	
R78	1meg		73061	
R79	560Ω		73022	
R80	220K		73153	
R81	47K		73045	
R82	3200Ω		73035	
R83	100K		73049	
R84	2200Ω		73029	
R85	100K 5%		73049-1	
R86	150K		73051	
R87	820K		73060	
R88	820K		73060	
R89	220K		73153	
R90	12K	2	73438	
R91	1.5meg		73062	
R92	2.2Ω		73719	
R93	27Ω		73006	
R94	18Ω		73724	

Note 1. Not used in some versions.
Note 2. Some versions may use 33K in this application (Part #73043).
Note 3. Some versions may use 10K connected to 125V source in this application (Part #73037).
Note 4. Some versions may use 15K in this application.
Note 5. Some versions may use 3.9meg in this application (Part #73068).
Note 6. Some versions may use 120K in this application (Part #73050).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st Video IF	29564A	17-4534	TV-131		VF-4	
L2	40.75MC Trap	29565A			6235		
L3	2nd Video IF	29565	17-4523	TV-130	6219	VF-3	
L4	3rd Video IF	29565	17-4523	TV-130	6219	VF-3	
L5	4th Video IF	29697	17-4523	TV-130	6219	VF-3	
L6	RF Choke	29566	19-1005	BC-566	4612		10 Microhenries
L7	Shunt Peaking Coil	29506	19-4180	TV-183	6179	VP-5 *	180 Microhenries, wound on 39K resistor
L8	Series Peaking Coil	29652	19-3093 ▲	TV-181 ▲	6177 ▲	VP-3 ▲	83 Microhenries, wound on 3900Ω resistor
L9	4.5MC Trap	29548A			1470•		
L10	Shunt Peaking Coil	29710	19-3600	TV-205	6146		600 Microhenries, Note 1
L11	1st Sound IF	29053C		TV-119 •			
L12	Ratio Detector	29694	17-3477				

Note 1. Some versions may use 400 microhenries peaking coil wound on 18K resistor (Part #29577).
* Parallel with 39K resistor. ▲ Parallel 3900Ω resistor. • Disregard tap.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: Packard-Bell PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L13	74Ω		29695B		TV-165 *	6210	H-102	HS-5	Horiz. Freq. * Disregard tap.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L14	.270A	38Ω	9 Hy.	27006C	C5037 ①	C-2998 ①		C-2328 ①	26C44 ①	C-27X

① Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ①1.25A	115V ②.540A	12.6VCT ③4.2A	29054						
	PRI.	SEC. 1								
T2	117V ④.34A	24V ⑤1.7A		29060A						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T3	Vert. Output	29480A			Y-319				
T4	Yoke-Horiz. (17.8MH) 110°-Vert. (15MH) Rear Cover & Centering Device	29545C ①			Y-110 ②③		DY-27A ②③	Y-46 ②④	Y-60-2 ③ YC-110
T5	Horiz. Output	34071 29479D	FB491 *		X166		HO-290 *	FLY-100 *	D-139 *

① Includes C67, C68, C69, R74, R75 and R76.
② Connect terminal #2 to terminal #3 of T5, yoke terminal #10 to CT6.
③ Use original yoke damping network.
④ Connect same as original.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5	5				5	5	5
4	4				4	4	4
3	3				3	3	3
1	1				1	1	1

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: Packard-Bell PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	83018 ①	4A1	① Used in Model 21VT5
	4"	PM	3-4Ω	83014B ②	4A07	② Used in Model 17VT7

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: Packard-Bell PART No.	FEDERAL PART No	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No	SARKES TARZIAN PART No.	NOTES
M1	.270A	72025 ①	HF504 ①	1N1008 ②	SD-500 ①	M500 ① 350 ③	① Silicon Type. ② Germanium Type.
M2	.270A	72025 ①	HF504 ①	1N1008 ②	SD-500 ①	M500 ① 350 ③	③ Selenium Type.
M3		72017 ③	1215 ④		1T1 ③		
M4		72017 ③	1215 ③		1T1 ③		
M5		72017 ③	1215 ③		1T1 ③		
M6		72017 ③	1215 ③		1T1 ③		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: Packard-Bell PART No: FUSE	Packard-Bell PART No: HOLDER	LITTELFUSE PART No: FUSE	LITTELFUSE PART No: HOLDER	BUSS PART No: FUSE	BUSS PART No: HOLDER
M7	1" Length of #26 Wire							
M8	1" Length of #26 Wire							

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M9	Tuner	10608B	VHF
M10	Switch	86068A	Channel Selector (Rotary Wafer Type)
M11	Motor	58067	24 Volts

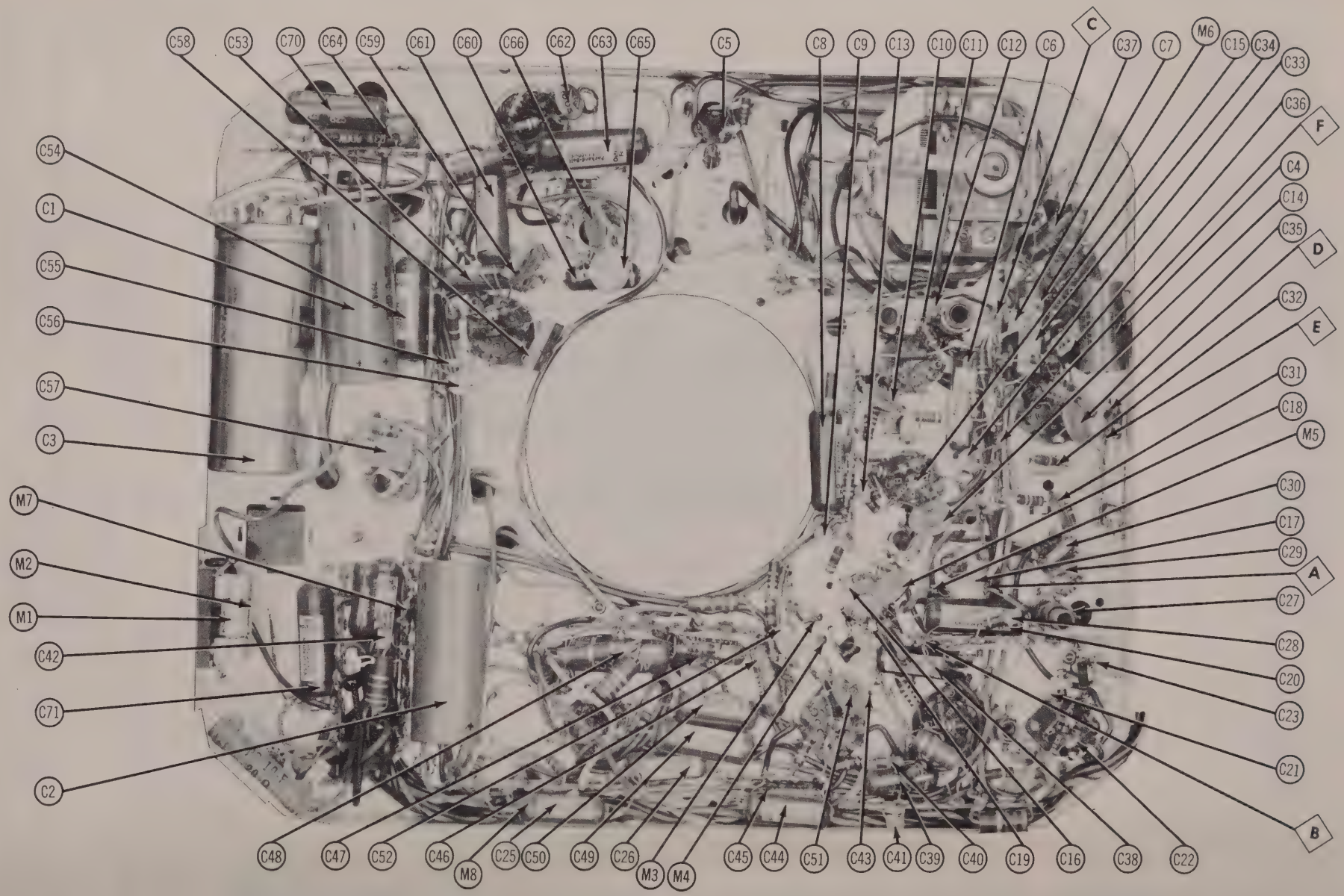
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

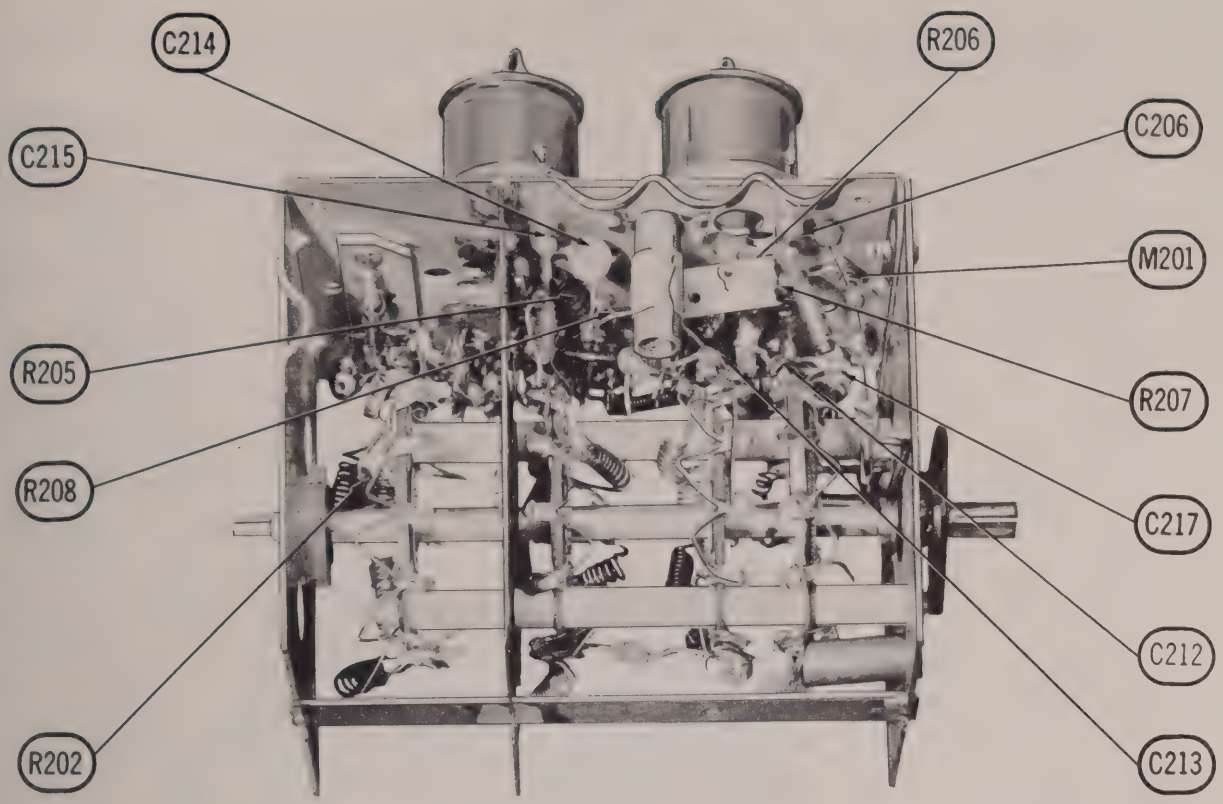
NAME	PART NO.	DESCRIPTION
Safety Glass	55089	17" Models
Safety Glass	55090	21" Models
Mask	55108	17" Models
Mask	55109	21" Models

WIRING DATA

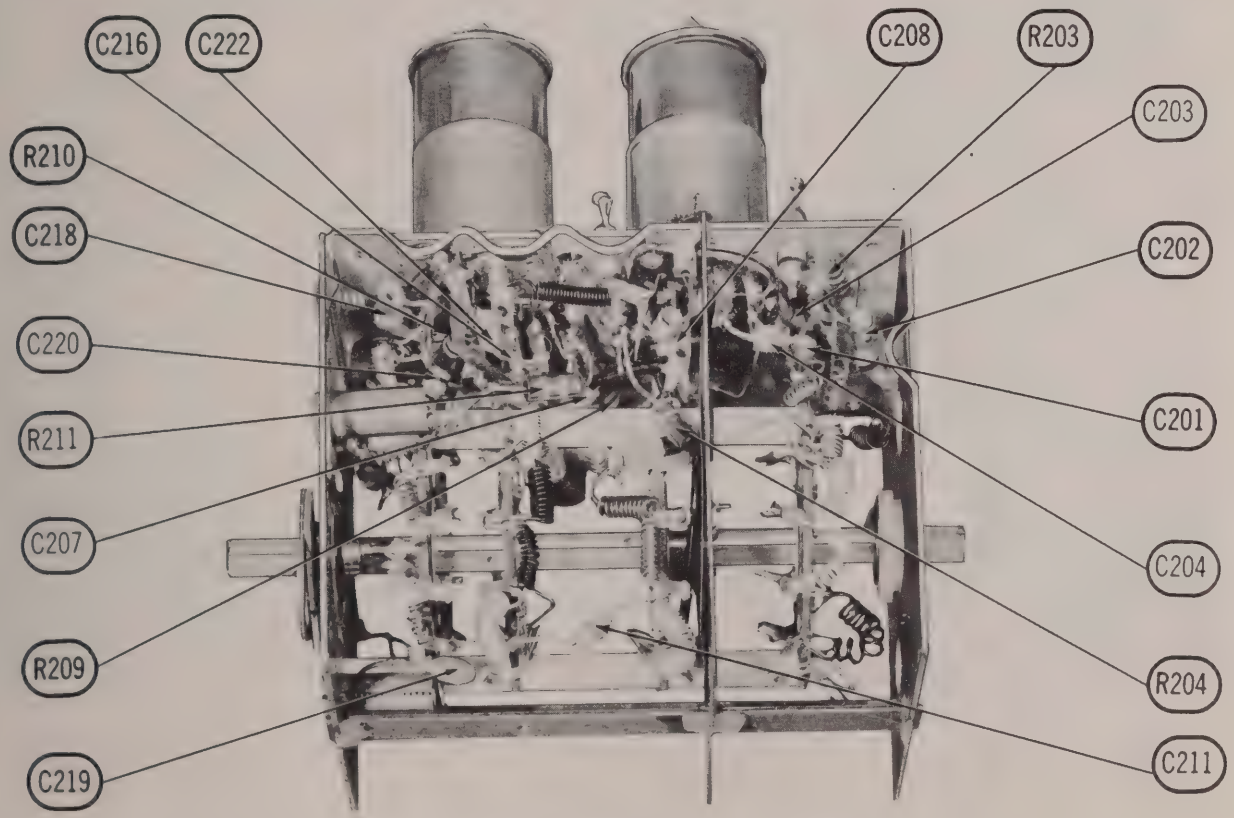
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8736 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8876
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



CHASSIS BOTTOM VIEW - CAPACITOR, ALIGNMENT & MISC. IDENTIFICATION



TUNER 10608 - LEFT SIDE



TUNER 10608 - RIGHT SIDE

REMOTE CONTROL PARTS LIST AND DESCRIPTIONS

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R95A	50K	½	25040B	B-32	A47-50K-Z	Q13-123	U33	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R96A	50K	½	25917B	B-31	A47-50K-S	Q11-123	U35	Brightness
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R97A	50K	½	25946	B-32	A47-50K-Z	Q13-123	U33	Fine Tuning
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Use KR with CRL "red label" controls and KB with "blue label" controls.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Packard-Bell PART No.	QUAM PART No.	
SP2	2½"	PM	3-4Ω	83114	25A07	

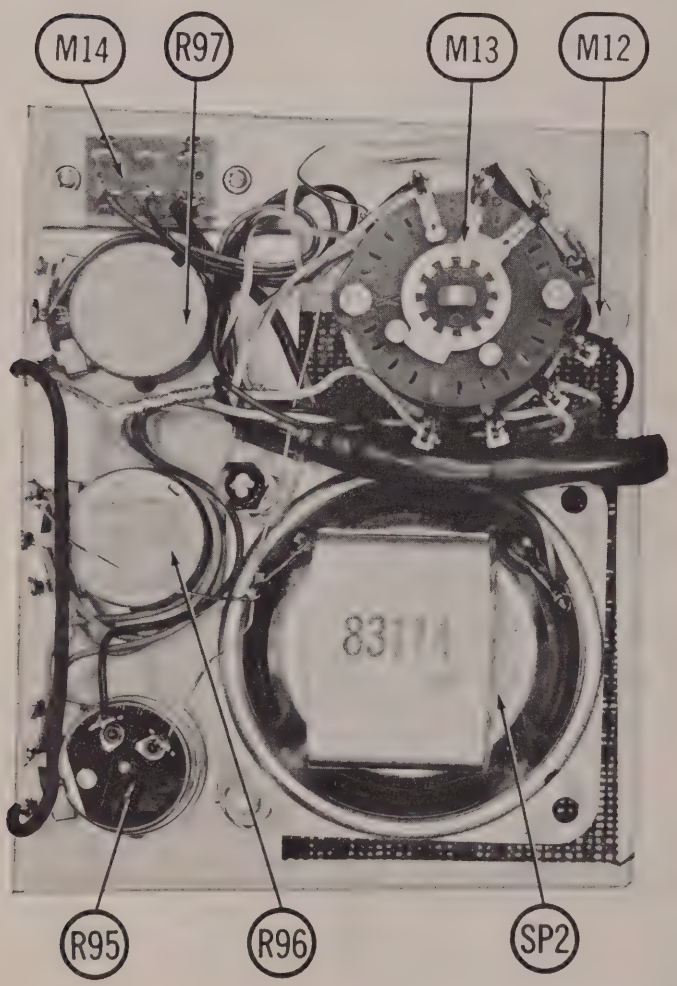
MISCELLANEOUS

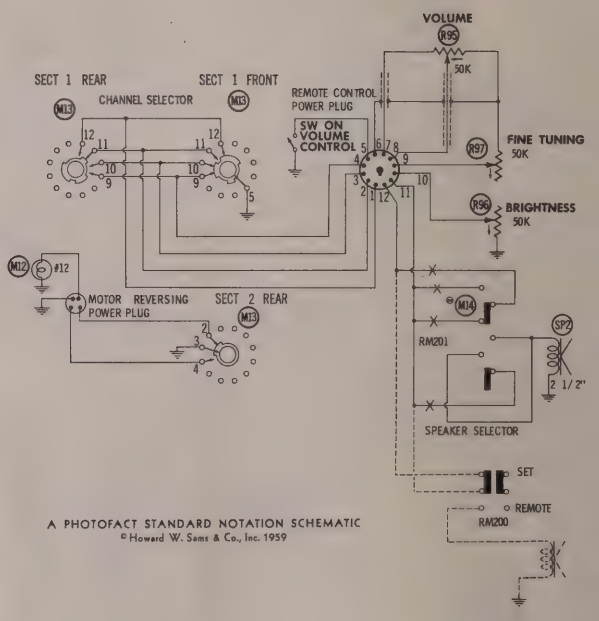
ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M12	Lamp	54008	#12
M13	Switch	86063	Channel Selector (Rotary Wafer Type)
M14	Switch	86714	Remote-Set-Both (3 Position Slide Type)
	Switch	86712	Speaker Selector (DPST Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52217D	VHF Channel Selector
Knob	52220A	VHF Fine Tuning, Volume, Brightness
Cabinet	21135-1B	Grille
Cabinet	21135-2B	Shell
Cabinet	21135-3	Base





A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

(REMOTE CONTROL) RM-200, RM-201

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	●2.8meg	120Ω	0Ω	.1Ω	††470Ω	††470Ω	0Ω		
V2	6BZ6	††6800Ω	††68Ω	0Ω	.1Ω	†1000Ω	†1000Ω	100K		
V3	6AS8	▪100Ω	.1Ω	270Ω	.1Ω	0Ω	3300Ω	0Ω	.1Ω	▪100Ω
V4	6BZ6	100K	150Ω	0Ω	.1Ω	†6800Ω	▪0Ω	150Ω		
V5	6AU6	1Ω	0Ω	0Ω	.1Ω	▪3300Ω	▪18K	120Ω		
V6	6BN8	INF	24K	INF	.1Ω	0Ω	0Ω	▪180K	4.7meg	680Ω
V7	6AS5	▪220Ω	▪470K	.1Ω	0Ω	▪470K	†270Ω	†660Ω		
V8	6BY6	280K	0Ω	0Ω	.1Ω	▪560K	†18K	2.7meg		
V9	6CG7	†22K	▪560K	5600Ω	.1Ω	0Ω	●†2.7meg	3meg	0Ω	0Ω
V10	6AQ5	●1.7meg	0Ω	0Ω	.1Ω	†480Ω	†220Ω	●1.7meg		
V11	6CG7	†8300Ω	2.2meg	2200Ω	0Ω	.1Ω	†150K	100K	2200Ω	0Ω
V12	6DQ6A	TP	.1Ω	TP	†12K	600K	NC	0Ω	0Ω	TOP CAP †13Ω
V13	6AX4GT	NC	NC	¶6meg	NC	†0Ω	NC	.1Ω	0Ω	
V14	1X2A		PINS	1 THRU 9	HAVE	INFINITE	RESISTANCE			TOP CAP †333Ω
V15	21CEP4	0Ω	39K	†1.7meg	●†5.5meg	NC	NC	300K	.1Ω	
V201	6BS8	†2200Ω	480K	INF	0Ω	.1Ω	INF	1.4meg	0Ω	0Ω
V202	6CL8	15K	▪5600Ω	0Ω	.1Ω	0Ω	▪1800Ω	▪27K	0Ω	235K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

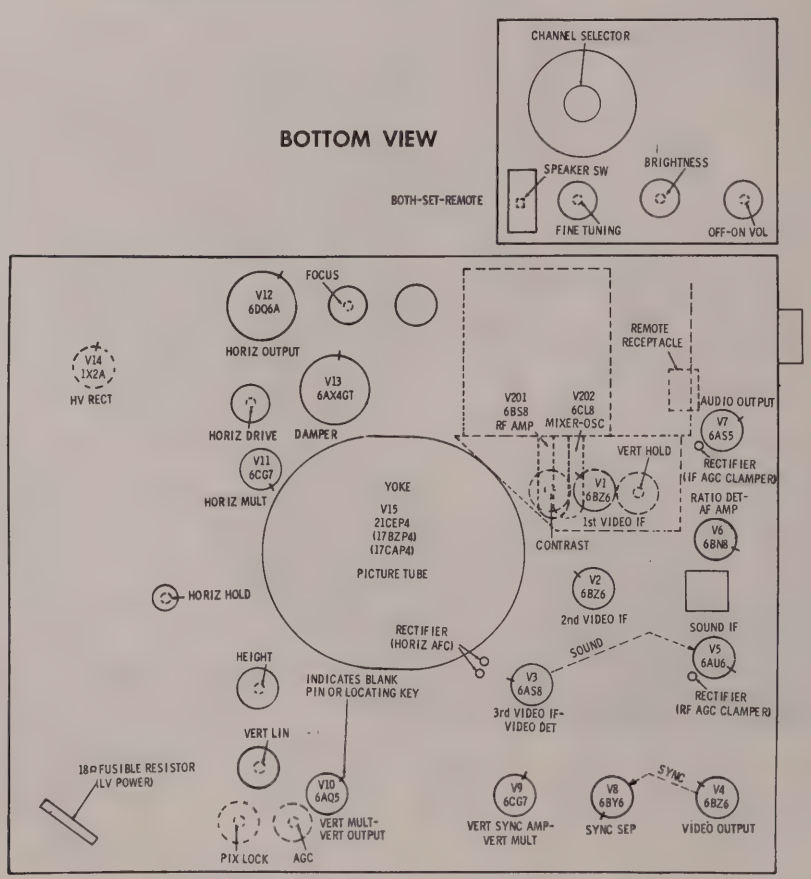
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

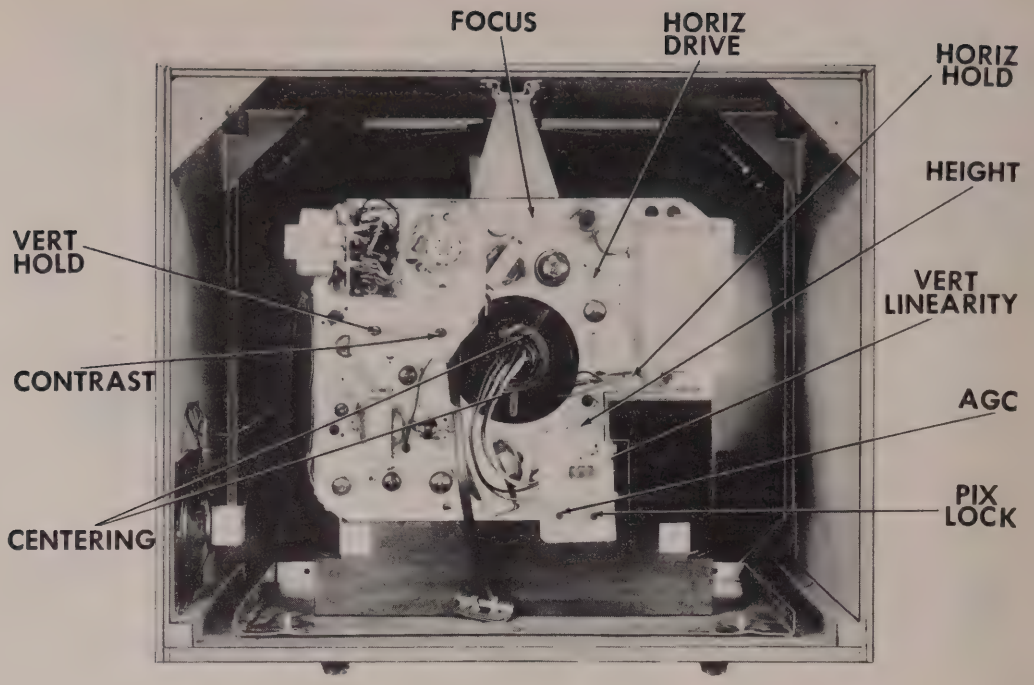
† MEASURED FROM 240V SOURCE. ▪ MEASURED FROM 125V SOURCE.

‡ MEASURED FROM PIN 3 OF V13. NC NO CONNECTION

†† MEASURED FROM PIN 7 OF V2. TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

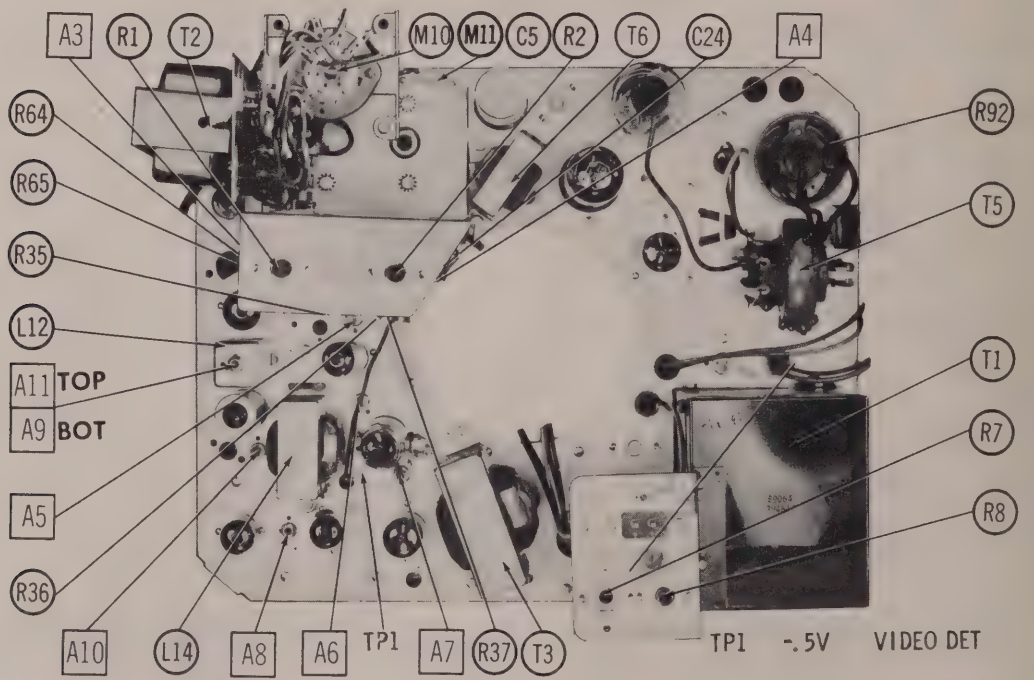
Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive control (R4) until white lines disappear.

If the Horizontal Drive was adjusted, tune in a TV station and repeat above procedure. Check horizontal sync by switching off channel and back again.



CHASSIS —TOP VIEW

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

**ZENITH CHASSIS
19B20, Q, U, UD**

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH CHASSIS
19B20, Q, U, UD

B2330EUD (Ch. 19820UD)

ZENITH CHASSIS
19B20, Q, U, UD

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 11 push-on type knobs from the front.
2. Remove 5 metal screws holding rear cover. Remove rear cover.
3. Remove tone control plug, tuner and speaker leads.
4. Remove 2 metal screws holding UHF tuner and 2 metal screws holding VHF tuner to rear of cabinet.
5. Locate shaft driven, On-Off Volume control located on UHF tuner bracket. Loosen rear screw on nylon coupling bushing, slide shaft forward, remove "C" washer holding control to bracket, slide rubber grommet from shaft and remove control from bracket.
6. Remove 4 nuts holding speaker.
7. Remove 4 bottom chassis bolts.
8. Remove chassis.

B2330EUD (Ch. 19820UD)

ZENITH CHASSIS
19B20, Q, U, UD

TRADE NAME	Zenith	MODELS	CHASSIS
		B2329R, B2330E, R, B2335, E, R, B2358E, R, B2359, E, B2360M, R	19B20
		B2329RU, B2330EU, RU, B2335EU, RU, U, B2358EU, RU, B2359EU, U, B2360MU, RU	19B20U
		B2329RUD, B2330EUD, RUD, B2335EUD, RUD, UD, B2358EUD, RUD, B2359EUD, UD, B2360MUD, RUD	19B20UD
		B3010E, H, R, B3011, E, Y, B3012H, R, B3013H, B3014H, R, B4007E, R, B4012H, R	19B20Q
		B3010E, H, R, B3011, E, Y, B3012H, R, B3013H, B3014H, R, B4007E, R, B4012H, R	Remote Chassis S-43724 or S-43894
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Avenue, Chicago 39, Illinois		
TUBES	VHF-Nineteen, UHF-Twenty, Remote Control-Eight		
POWER SUPPLY	110-120 Volts 60 Cycle	RATING 230 Watts, 2.05 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supplying power to the receiver. Set the Fine Tuning to the center of its range. The adjustments are accessible, one at a time, thru a hole in rear of the tuner. Adjust for best picture and sound.

SAFETY GLASS REMOVAL

Remove 4 Channel Selector and On-Off-Volume push-on type knobs from the front. Remove 4 metal screws now visible, holding metal trim. Remove safety glass.

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
The focus may be varied by means of a Focus Control. (For location, see tube placement chart.)

C. Fringe Lock
Adjust picture to lock in with hold controls. If picture jitters, tears, etc. adjust Fringe Lock until stable. Readjust the hold controls and check operation on all channels in the area.

D. Width
The width may be varied by means of a metallic sleeve located between the yoke and the picture tube neck. Adjust sleeve in or out of the yoke for a picture slightly larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart.)

FUSE

One fuse is used for low voltage supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

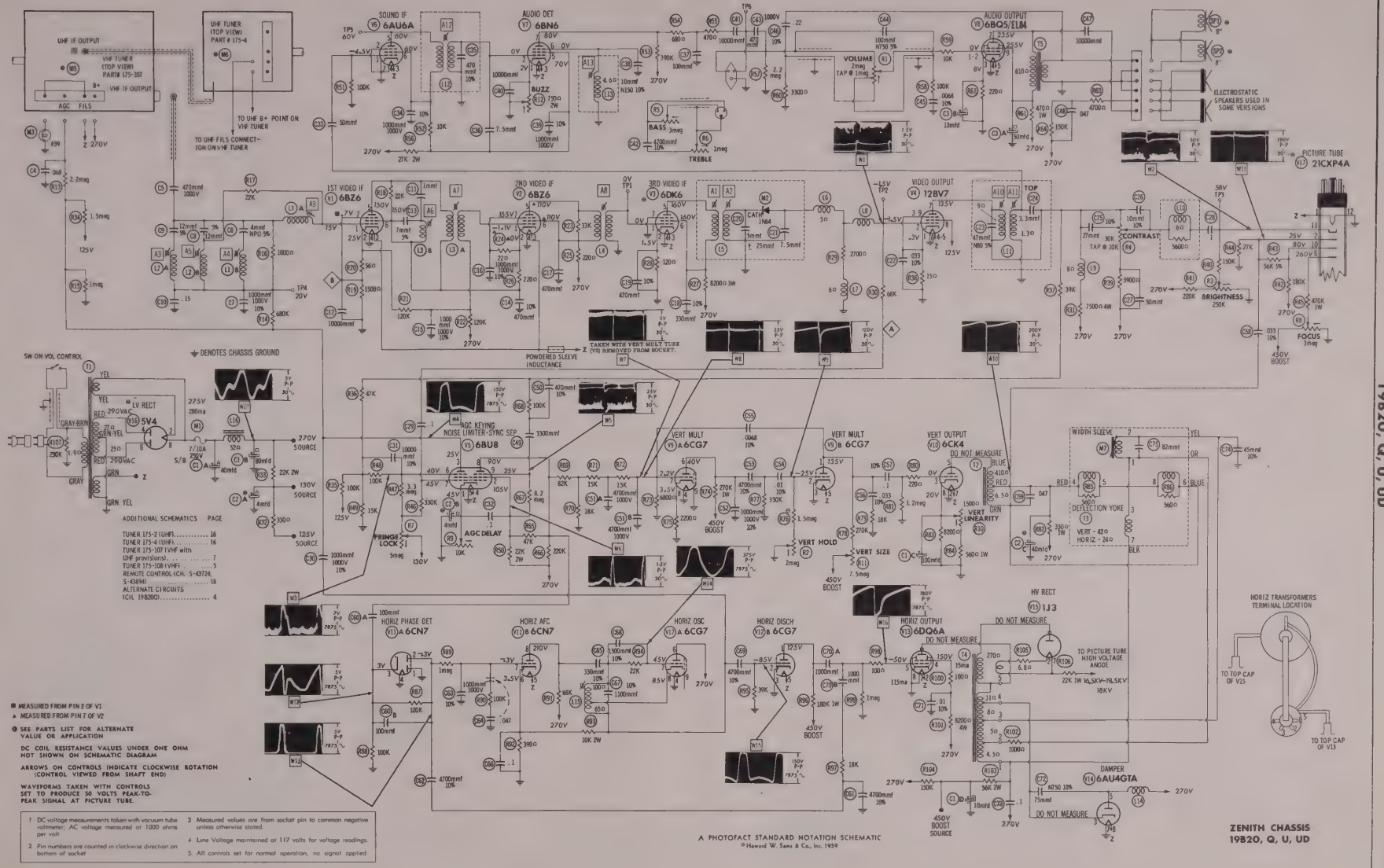
PIN CUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible. Position 2 magnets so that all sides are straight.

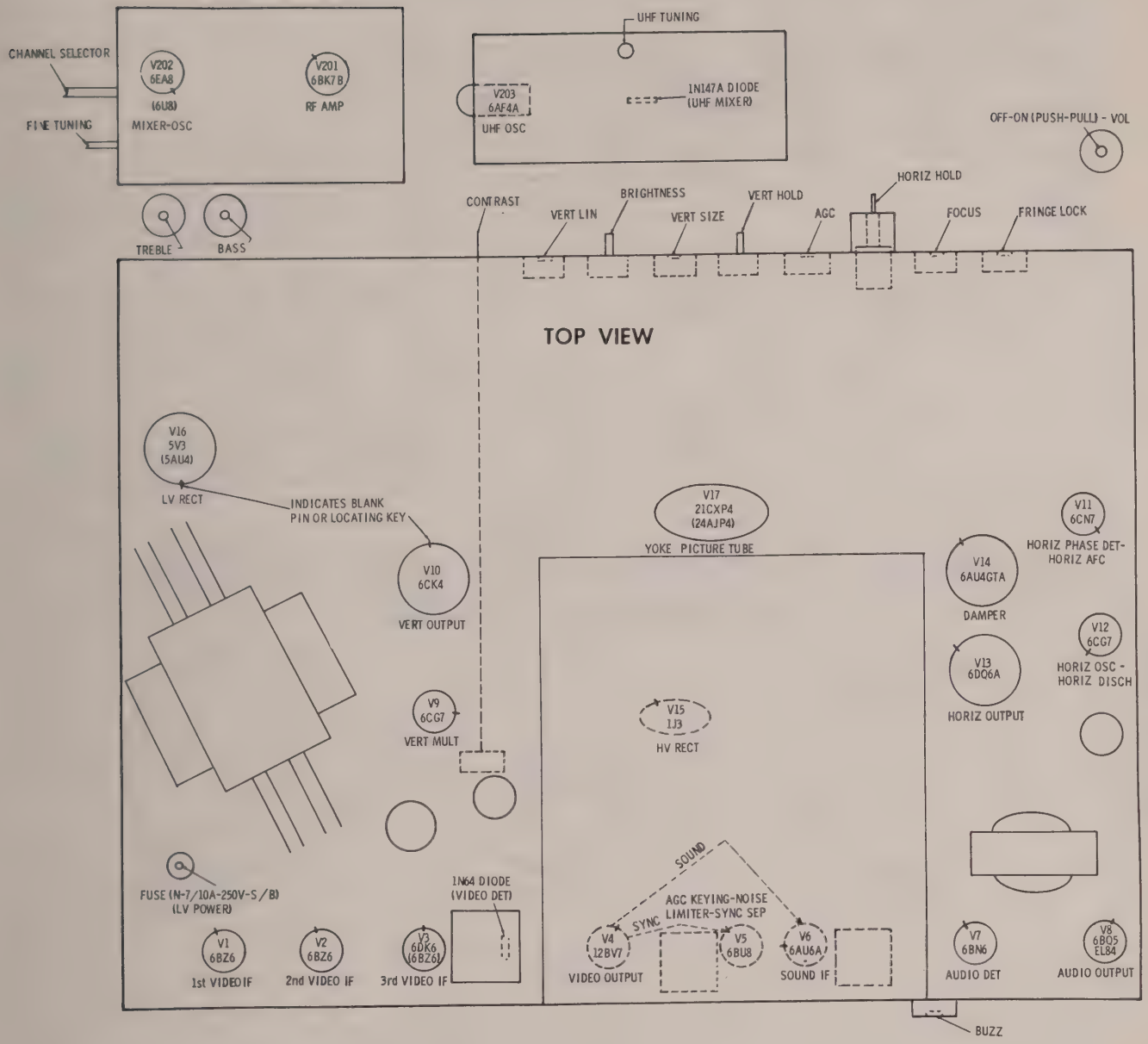
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H964


SOUND IF V5 6AU6A
AUDIO DET V7 6BN6
AUDIO OUTPUT V8 6BQ5/EL84
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6DK6
VIDEO OUTPUT V4 12BV7
PICTURE TUBE V17 21CXP4A
SW ON VOL CONTROL
RECT V18 5V4
AGC KEYING NOISE LIMITER-SYNC SEP. V5 6BU8
VERT MULT V9A 6CG7
VERT MULT V9B 6CG7
VERT OUTPUT V10 6CK4
HV RECT V15 1J3
HORIZ PHASE DET V11A 6CN7
HORIZ AFC V11B 6CN7
HORIZ OSC V12A 6CG7
HORIZ DISCH V12B 6CG7
HORIZ OUTPUT V13 6DQ6A
DAMPER V16 6AU4GTA
UHF IF OUTPUT
VHF TUNER (TOP VIEW) PART # 175-107
UHF TUNER (TOP VIEW) PART # 175-4
TO UHF B+ POINT ON VHF TUNER
TO UHF FILS CONNECTION ON VHF TUNER
AGC FILS
ELECTROSTATIC SPEAKERS USED IN SOME VERSIONS
VOLUME
TREBLE
BASS
CONTRAST
BRIGHTNESS
FOCUS
VERT HOLD
VERT SIZE
VERT LINEARITY
WIDTH SLEEVE
DEFLECTION YOKE
HORIZ TRANSFORMERS TERMINAL LOCATION
TO TOP CAP OF V15
TO TOP CAP OF V13
TO PICTURE TUBE HIGH VOLTAGE ANODE
POWDERED SLEEVE INDUCTANCE
FRINGE LOCK
AGC DELAY
DENOTES CHASSIS GROUND
DO NOT MEASURE
TAKEN WITH VERT MULT TUBE (V9) REMOVED FROM SOCKET.
ADDITIONAL SCHEMATICS PAGE
TUNER 175-2 (UHF)..... 16
TUNER 175-4 (UHF)..... 16
TUNER 175-107 (VHF with UHF provisions)..... 7
TUNER 175-108 (VHF)..... 5
REMOTE CONTROL (CH. S-43724, S-43894)..... 18
ALTERNATE CIRCUITS (CH. 19820D)..... 4
■ MEASURED FROM PIN 2 OF V1
▲ MEASURED FROM PIN 7 OF V2
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated.
4 Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1959
ZENITH CHASSIS 19820, Q, U, UD

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (7/10A), V16

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V15, V17
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V12, V13, V14
Narrow picture V12, V13, V14, V16
Vert. off freq. V9
Horiz. off freq. V12

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1, (V203 UHF only)
No pic, has sound, has raster V4, V17
Has pic, no sound V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5, V11
No vert. or horiz. sync V5

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A1 thru A13 ..... General Cement #8606, 8606L, 8282, 9295
Walsco #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470mmf in series 56Ω Carbon Resistor across sweep output	High side to TP1. Low side to chassis.	44MC (10MC Swp)	39.75MC 41.25MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to TP2. Low side to chassis.	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry for the response as in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. Check to see that the cores are entering their respective windings from opposite ends of the coils.
2.	Direct	High side to ungrounded tube shield floating over Osc.-Mixer tube (V202). Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5, A6	Connect a clip lead from point (A) to chassis. Connect a clip lead from point (B) to TP4. Use high scope gain and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig. 2. A3 controls the 39.75MC marker, A4 the 41.25MC marker, and A5 and A6 the 47.25MC marker.
3.	"	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9, & Mixer Plate Coil	Disconnect clip lead from point (B) and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects low side of curve and A8 affects high side.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver terminals. Tune in a TV station and adjust the attenuator until the signal is below the limiting level of the 6BN6 (V7) as evidenced by a hiss in the sound similar to super-regeneration. Adjust A10, A11, A12 and A13 for maximum sound and best quality. Adjust the Buzz control (R12) for MINIMUM buzz. If the hiss disappears during alignment, further reduce the signal until the hiss returns.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6

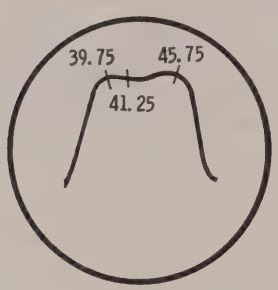


FIG.1

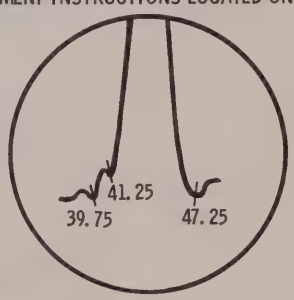


FIG.2

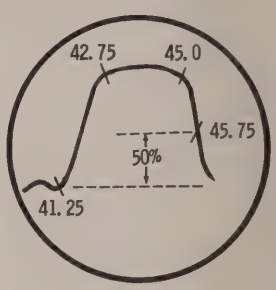
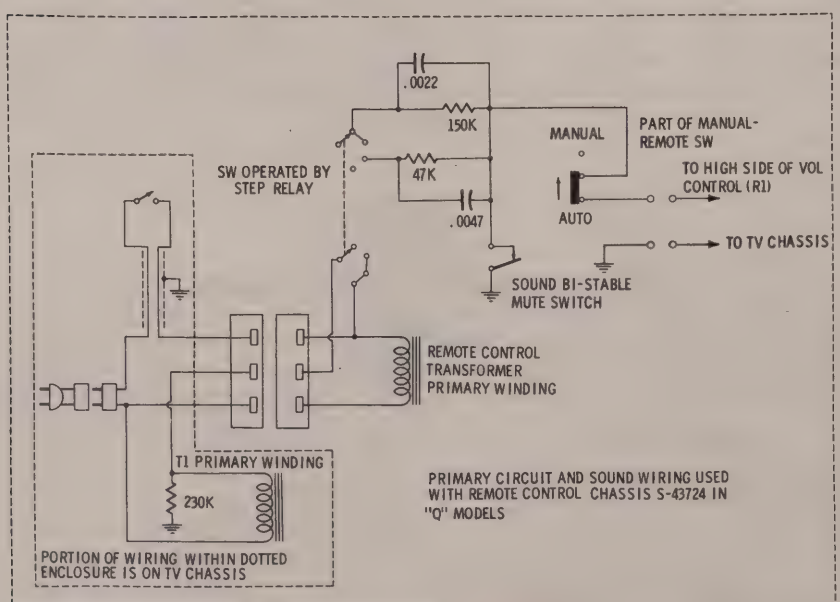


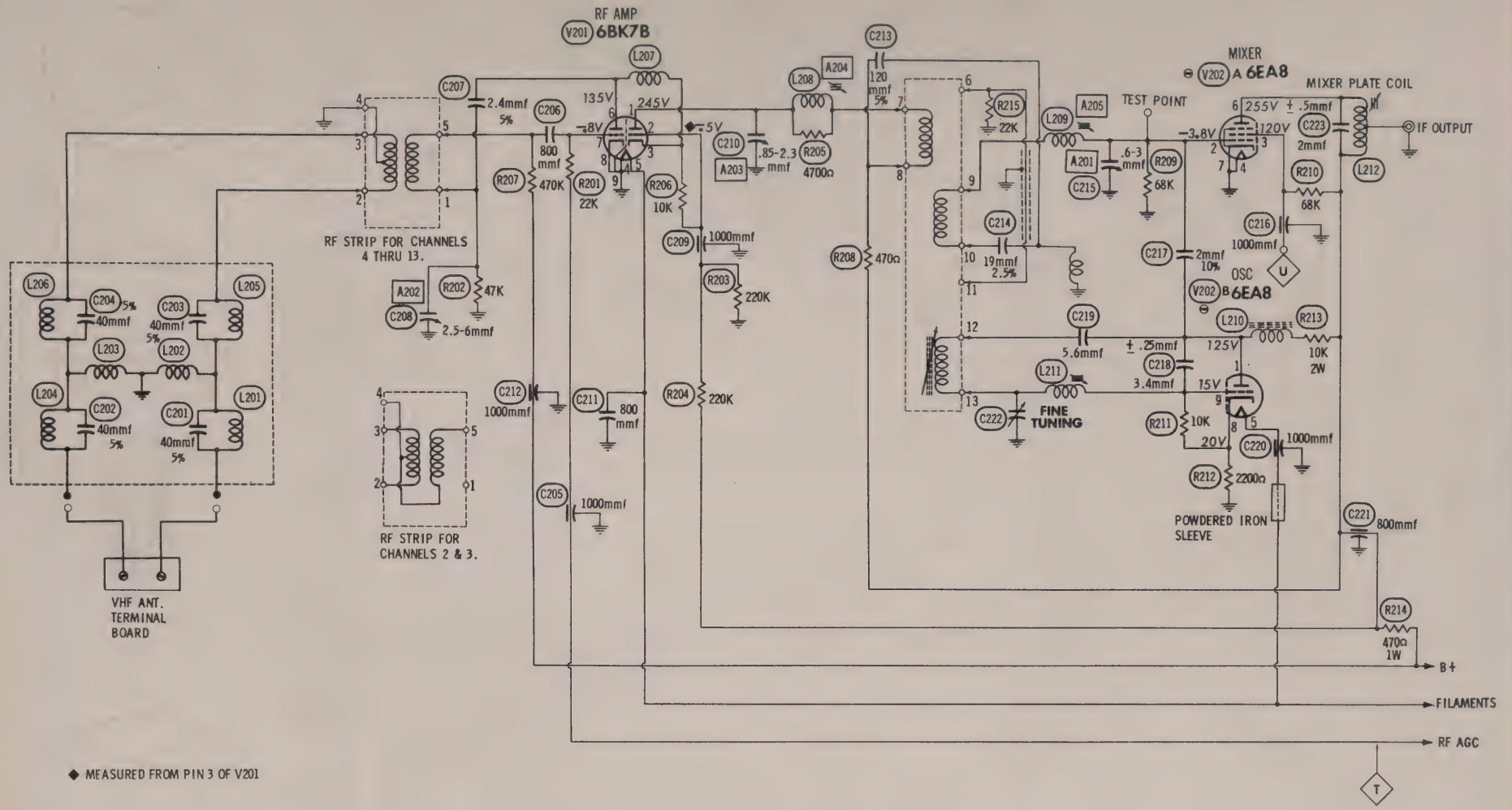
FIG.3



A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1959

ALTERNATE SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

VHF TUNER 175-108

ZENITH CHASSIS
19B20, Q, U, UD

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNERS #175-107, #175-108

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Individual channel adjustment screws are accessible one at a time, thru a hole in the back of the tuner, as the channel selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	50-300Ω Matching Trans.	Across VHF antenna terminals thru matching transformer.	69MC (10MC Swp)	67.25MC 71.75MC	4	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201, A202, A203	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	"	201MC (10MC Swp)	199.25MC 203.75MC	"	"	A204, A205	Adjust for maximum gain and symmetry of response similar to Fig. 201. with markers as shown. Repeat steps 1 and 2 until best overall symmetry is obtained.

UHF ALIGNMENT FOR TUNER #175-4

Alignment of the UHF tuner should not be attempted without the proper test equipment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Fig. 202	Across UHF antenna terminals thru matching network (Fig. 202).	713MC (10MC Swp)	711.25MC	53	Vert. Amp. thru 10K across video detector load.	A206, A207, A208	With the UHF tuning knob set to channel 54, the rocker arm on the tuner should be in the horizontal position. If necessary, loosen set screw and turn the shaft independently of the pulley until the arm is in the horizontal position with the channel indicator on channel 54. Tighten the set screw. If the calibration is off more than 3 channels, adjust A206 to place video marker at 50% on curve as in Fig. 203. The image (weaker response) will appear also. The response toward counterclockwise position of A206 is the proper response. Adjust A207 and A208 for maximum amplitude of response similar to Fig. 203.
4.	"	"	473MC (10MC Swp)	471.25MC	14	"		Check for response similar to Fig. 203. If the oscillator is off more than 3 channels, adjust oscillator travel adjustment (osc., mixer and antenna travel adjustments are the three hex nuts on top of the UHF tuner next to the tuner chassis) to scale. Care must be used when making the adjustment so as not to move the rocker arm out of its bearing. Set the mixer and antenna travel adjustments for maximum response on scope.
5.	"	"	887MC (10MC Swp)	885.25MC	83	"	A209, A210, A211	Adjust A209 to place marker at 50% on curve similar to Fig. 203. Adjust A210 and A211 for maximum amplitude and symmetry.

UHF ALIGNMENT FOR TUNER 175-2

Alignment of the UHF tuner should not be attempted without the proper test equipment.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough generator output to provide a usable indication on VTVM.
Adjust A222 for the most satisfactory picture with MINIMUM noise on any UHF station.
Remove the AGC cable between the tuners at the UHF tuner socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across UHF antenna terminals with 120Ω in each lead.	473.5MC (Unmod)	14	DC probe to point (V). Common to chassis.	A223	Adjust for maximum deflection.
4.	"	"	887.5MC	83	"	A224	"

5. The Oscillator pickup coil (A225) is the short wire connected to the crystal inside the oscillator tuning gang section. Oscillator injection is changed by moving the wire in or out of the oscillator section of the tuning gang. Set tuning gang at mid range. Connect the negative lead of a 0-50 microammeter thru 5600Ω to point (V). Positive to chassis. Remove B+ at point (W) and note reading. Apply B+ and note reading. The difference between the readings should be between 10 and 40 microamps for proper injection.

FIG.201

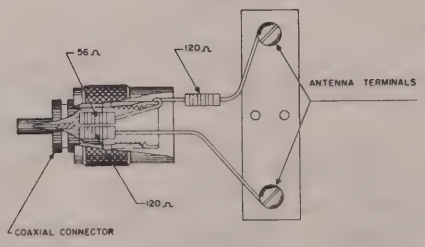


FIG.202

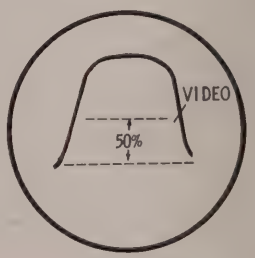
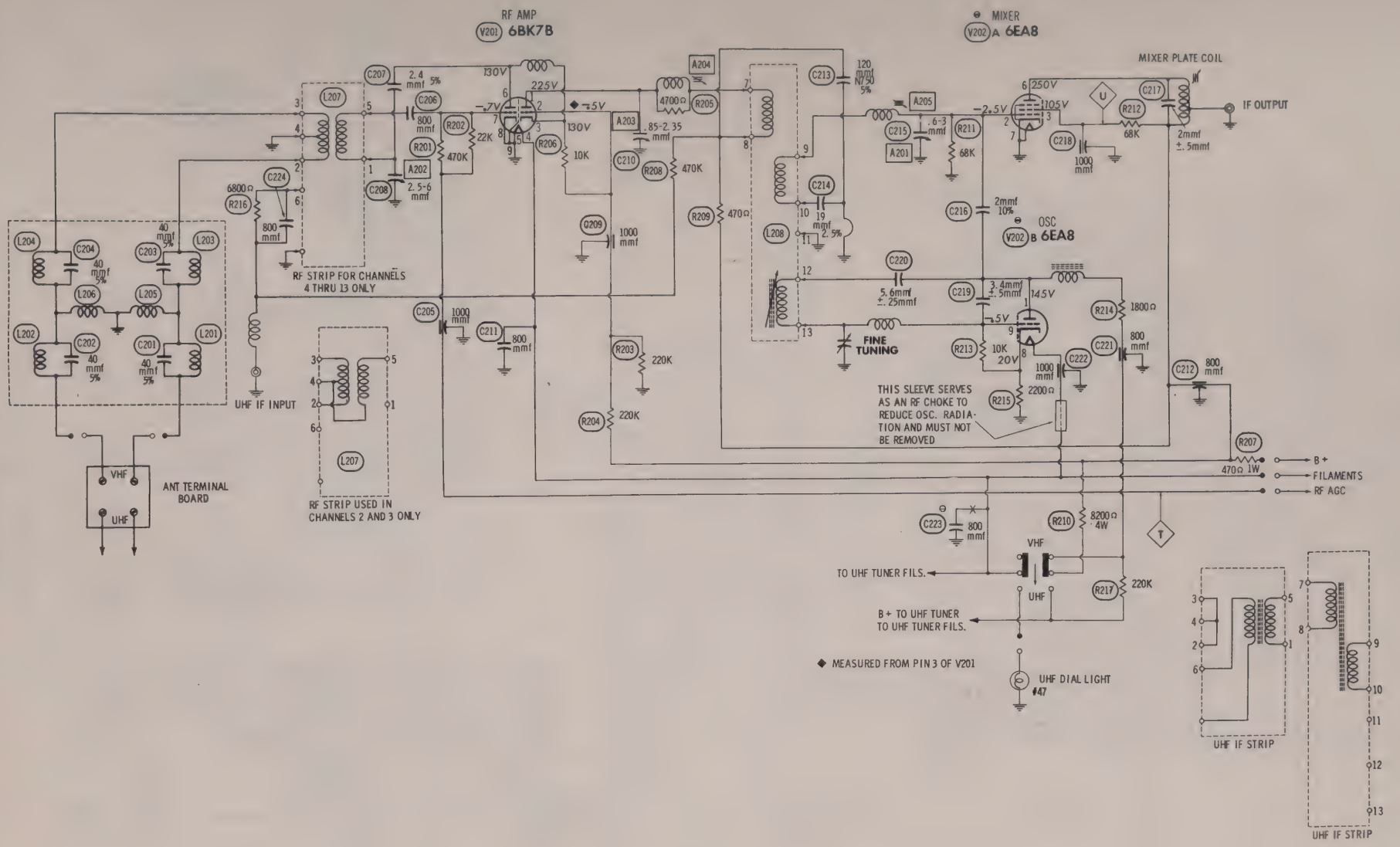


FIG.203



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

VHF TUNER WITH UHF PROVISIONS 175-107

ZENITH CHASSIS 19B20, Q, U, UD

TUNER PARTS LIST AND DESCRIPTIONS

175 – 107

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BK7B	
V202	Mixer-Osc.	6EA8	6U8 *

ITEM No.	USE	TYPE	NOTES
V203	UHF Osc.	6AF4A	

* Alternate.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	40		22-2511						5%
C202	40		22-2511						5%
C203	40		22-2511						5%
C204	40		22-2511						5%
C205	1000		22-3018	EF-001	MFT-1000			503C-D1	
C206	800		22-2331	BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C207	2.4		22-2596						5%
C208	2.5-6.0		22-2221						
C209	1000		22-3018	EF-001	MFT-1000			503C-D1	
C210	.85-2.35		22-2453						
C211	800		22-2331	BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C212	800		22-2577	EF-001	MFT-1000			503C-D1	
C213	120		22-2591			L10T12	CNO-312	5TCU-T12	N750 5%
C214	19		22-2406						2.5%
C215	.6-3.0		22-2504						
C216	2		22-2434	NPO-SI 2.2		C10V22C			10%
C217	2		22-2585			C10V22C			±.5mmf
C218	1000		22-3018	EF-001	MFT-1000			503C-D1	
C219	3.4		22-2592						±.25mmf
C220	5.6		22-2499						±.25mmf
C221	800		22-2577	EF-001	MFT-1000			503C-D1	
C222	1000		22-3018	EF-001	MFT-1000			503C-D1	
C223	800		22-2331	BPD-0008	DD-801	L10T8	B-382	5GA-T8	①
C224	800		22-2331	BPD-0008	DD-801	L10T8	B-382	5GA-T8	

① Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

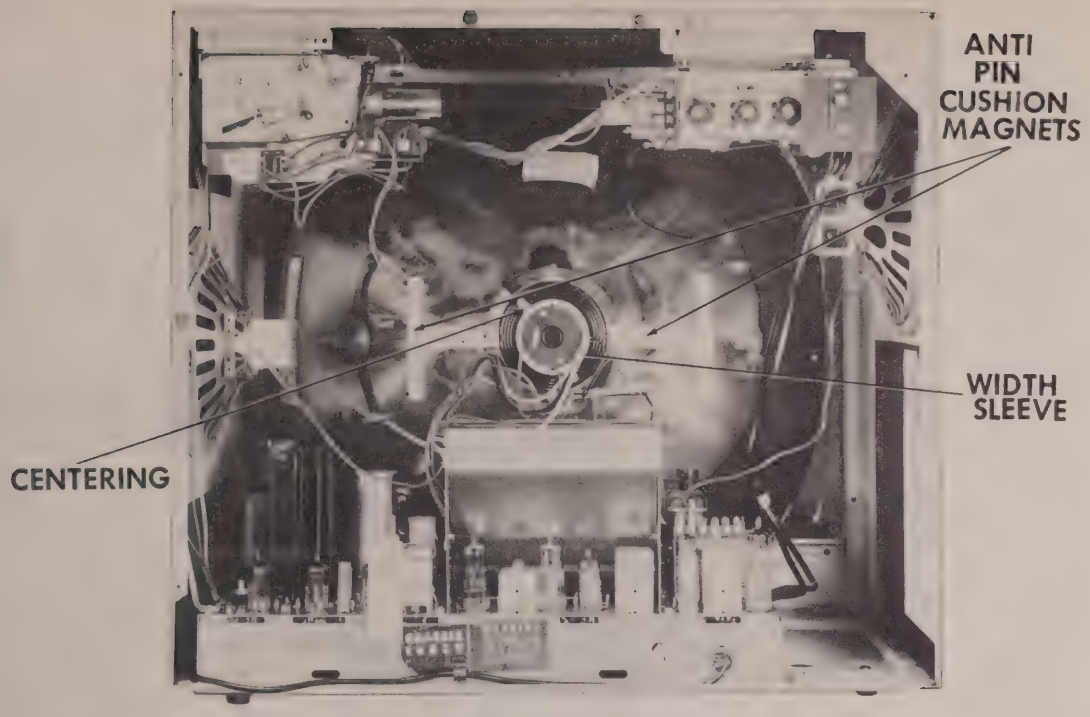
ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R201	470K			
R202	22K			
R203	220K			
R204	220K			
R205	4700Ω			
R206	10K			
R207	470Ω	1	63-2398	
R208	470K			
R209	470Ω			

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R210	8200Ω	4	63-3217	
R211	68K			
R212	68K			
R213	10K			
R214	1800Ω			
R215	2200Ω			
R216	6800Ω			
R217	220K			

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Coil	20-490	
L202	"	20-490	
L203	"	20-490	
L204	"	20-490	
L205	RF Choke	20-505	
L206	RF Choke	20-505	
L207A	Ant. Coil	S-21712	Channel 2
B	"	S-21713	Channel 3
C	"	S-21714	Channel 4
D	"	S-21715	Channel 5
E	"	S-21716	Channel 6
F	"	S-19847	Channel 7
G	"	S-19848	Channel 8
H	"	S-19849	Channel 9
I	"	S-19850	Channel 10
J	"	S-19851	Channel 11
K	"	S-19852	Channel 12
L	"	S-19853	Channel 13
M	UHF IF Input	S-20990	
L208A	RF, Mixer Grid & Osc. Coils	S-21702	Channel 2
B	"	S-21703	Channel 3

ITEM No.	USE	ZENITH PART No.	NOTES
L208C	RF, Mixer Grid & Osc. Coils	S-19864	Channel 4
D	"	S-19865	Channel 5
E	"	S-19866	Channel 6
F	"	S-19867	Channel 7
G	"	S-19868	Channel 8
H	"	S-19869	Channel 9
I	"	S-19870	Channel 10
J	"	S-19871	Channel 11
K	"	S-19872	Channel 12
L	"	S-19873	Channel 13
M	UHF IF	S-20992	
L209	RF Choke	20-431	
L210	Trap Coil	20-537	
L211	Trap Coil	20-538	
L212	RF Choke	S-18859	
L213	RF Choke	20-541	
L214	Mixer Plate	S-22152	
L215	RF Choke	20-722	



CABINET—REAR VIEW

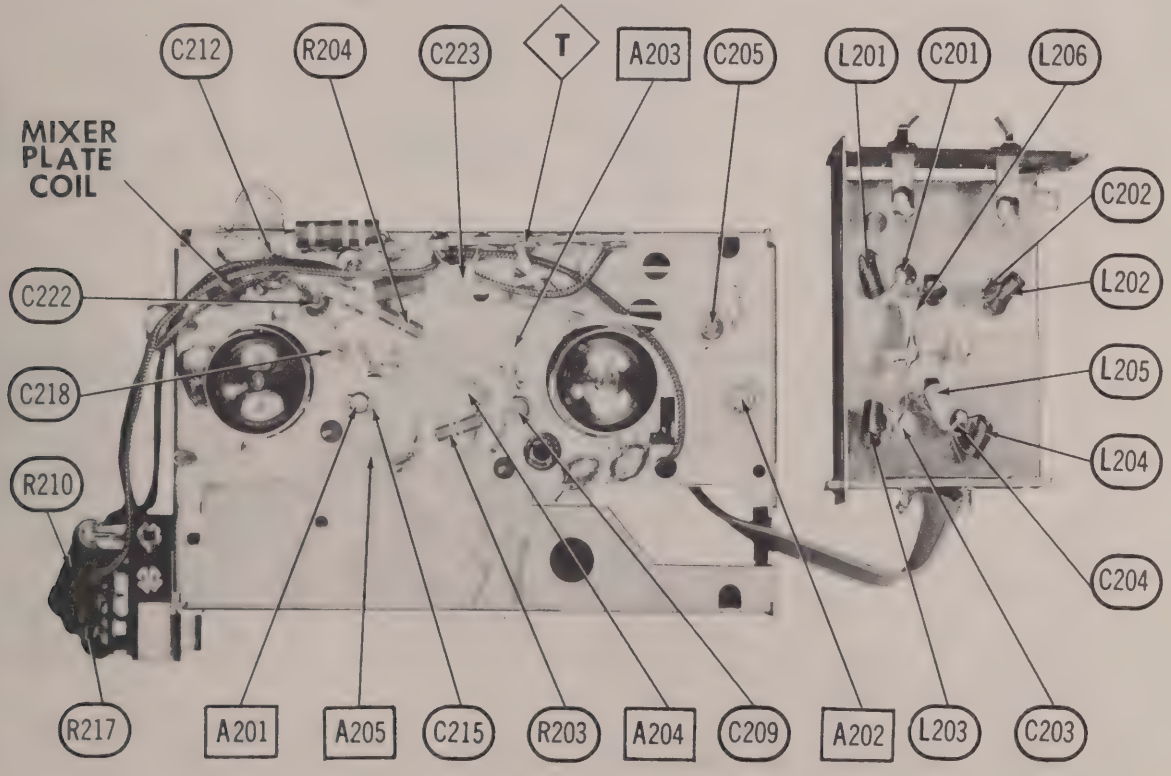
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

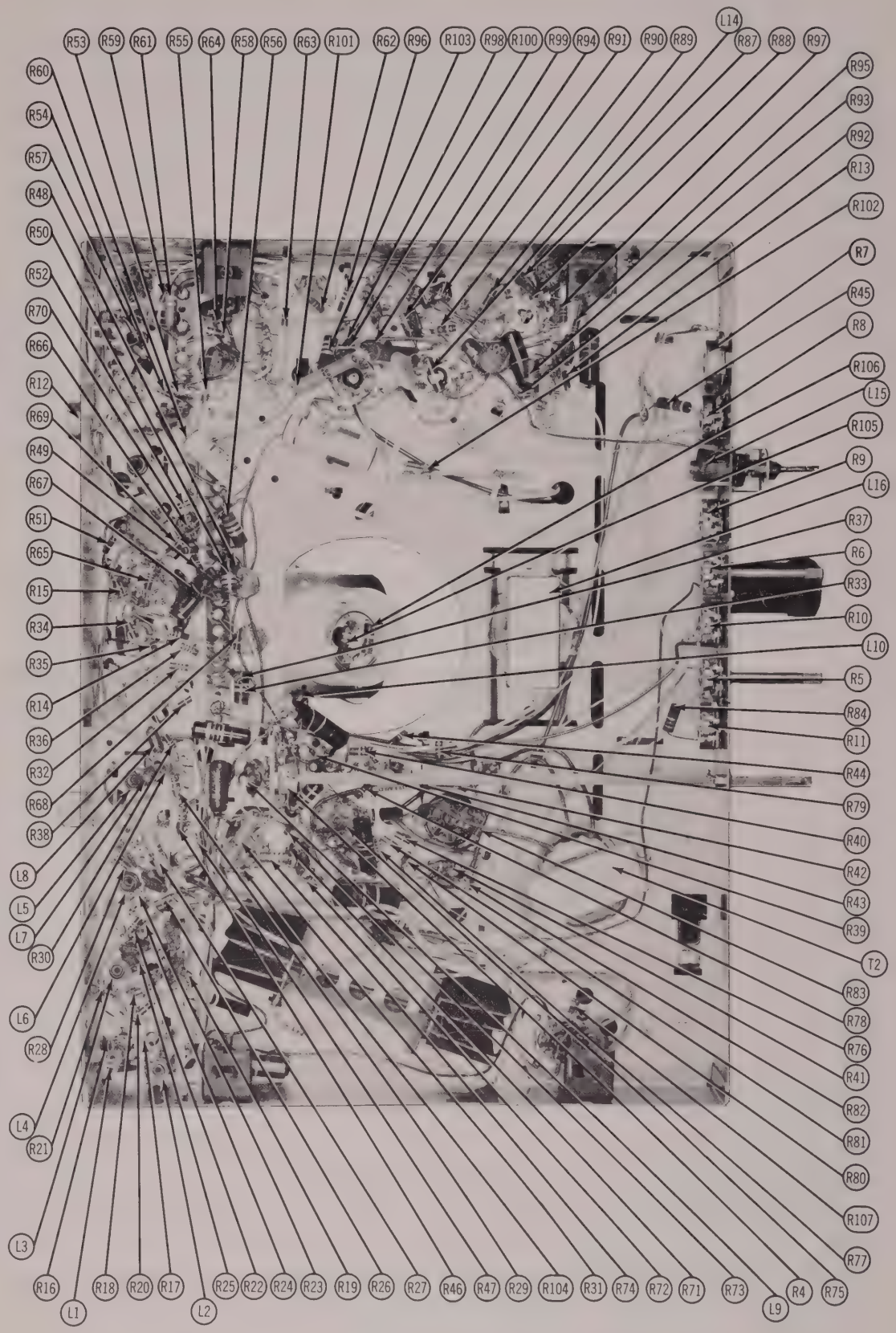
Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.



TUNER 175-107 TOP VIEW

SET 430 FOLDER 3



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF Amp.	6BZ6	
V2	2nd Video IF Amp.	6BZ6	
V3	3rd Video IF Amp.	6DK6	6BZ6 *
V4	Video Output	12BV7	
V5	AGC Keying-Noise Limiter - Sync Sep.	6BU8	
V6	Sound IF Amp.	6AU6A	
V7	Audio Det.	6BN6	
V8	Audio Output	6BQ5 / EL84	
V9	Vert. Mult.	6CG7	
V10	Vert. Output	6CK4	
V11	Horiz. Phase Det. - Horiz. AFC	6CN7	
V12	Horiz. Osc. -Horiz. Disch.	6CG7	
V13	Horiz. Output	6DQ6A	
V14	Damper	6AU4GTA	
V15	HV Rect.	1J3	
V16	LV Rect.	5V3	5AU4 *

* Alternate.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V17	21CXP4 24AJP4		21CXP4 ①	21CXP4 ② 24AJP4 ②	① "Silverama" ® ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	400	22-2971	AFH4-113-50	C0890	FP333.2		Q-460	
B	■80	400			BR1250	TC81		MTD-4520	
C	100	50							
D	▲10	475							
C2A	▲4	350	22-3110 ①				TMD-46		
B	4	150					TD-40-450		
C	■40	400							
C3A	■10	450	22-1625		A0430	FP171	TMS-53	S-250	
B	▲50	25			BBR50-25	TC29	TD-50-25	MT-0250	

* Not normally in distributors stock. Available through distributor on order to manufacturer.
① Some versions may omit C2C and use a 2 section filter 4-40 mfd @ 350-400V (Part #22-2967).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.068	200	22-2572	P488N-068		CUB4S68	GEM-4168	4TM-S68	
C5	470	1000	22-6	HVD-15-470	DD-471	BYA10T47	B-347	10GAB-T47	
C6	4		22-2549					5TCCB-V4S 5% *	NPO 5%
C7	1000	1000	22-17	HVD-15-1000		L10D1	JL-210	10GAB-D1S 10% *	10%
C8	12		22-2379		TCZ-12		CNO-412	5GA-Q12S 5% *	5%
C9	12		22-2379		TCZ-12		CNO-412	5GA-Q12S 5% *	5%
C10	.15	200	22-2147	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C11	1		22-1762		TCZ-1		CNO-510	5TCCB-V1	
C12	10000		22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C13	7		22-2513					5TCCB-V7S 5% *	5%
C14	470		22-16	DI -470	MD-471	L10T47	JL-347	5GA-T47S 10% *	10%
C15	1000	1000	22-17	HVD-15-1000		L10D1	JL-210	10GAB-D1S 10% *	10%
C16	1000	1000	22-17	HVD-15-1000		L10D1	JL-210	10GAB-D1S 10% *	10%
C17	470		22-16	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C18	330		22-2866	1469-00033		5R5T33		MS-333	10%
C19	470		22-16	DI-470	MD-471	L10T47	JL-347	5GA-T47S 10% *	10%
C20	5		22-2990					5GA-V5S ±.25mmf *	±.25mmf
C21	7.5		22-2742					5GA-V75	
C22	.033	200	22-2510	P288N-033	DF-303			2WF-S33	10%
C23	47		22-2467						N80 5%
C24	3.3		22-2343	NPO-SI 3.3	TCZ-3R3	CTA6V33C	ZT-5533	5TCCB-V33	
C25	27		22-3065	SI 27	D6-270		CNO-427	5GA-Q27S 10% *	10%
C26	10		22-3060	SI 10	D6-100		CNO-410	5GA-Q1S 10% *	10%
C27	50		22-2460	SI 50	D6-500	LT6Q5		5GA-Q5	
C28	.1	200	22-1777	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C29	.1	200	22-1777	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C30	1000	1000	22-17	HVD-15-1000		L10D1	JL-210	10GAB-D1S 10% *	10%
C31	10000		22-3					5GA-S1S 10% *	10%
C32	.1	200	22-1777	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C33	50		22-2460	SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C34	1000	1000	22-17	HVD-15-1000		L10D1	JL-210	10GAB-D1S 10% *	10%
C35	470		22-2480	1464-00047		5R5T47		MS-347	10%
C36	7.5		22-2742					5GA-V75	
C37	100		22-5	BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
C38	10		22-2411						N150 10%
C39	1000	1000	22-17	HVD-15-1000		L10D1	JL-210	10GAB-D1S 10% *	10%
C40	10000		22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C41	10000		22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C42	4700		22-14	DI-4700		L10D47	JL-247	5GA-D47S 10% *	10%
C43	470	1000	22-6	HVD-15-1000	DD-471	BYA10T47	B-347	10GAB-T47	
C44	100		22-2992		DTN-100	C10T1U	CN7-310	5TCU-T1S 5% *	N750 5%
C45	.0068	200	22-2656	P288N-0068				5BF-D68	10%
C46	.22	200	22-3055	P288N-22				2WF-P22	10%
C47	10000		22-3	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C48	.047	200	22-1778	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C49	3300		22-11	BPD-0033	DD-332	BYA10D33	B-233	5HK-D1	
C50	470		22-16	DI-470	MD-471	L10T47	JL-347	5GA-T47S 10% *	10%
C51A	4700	1000	22-24	HVD-15-4700	DD-472	BYA10D47M	B-247	10HKB-D47	
B	4700	1000		HVD-15-4700	DD-472	BYA10D47M	B-247	10HKB-D47	
C52	1000	1000	22-17	HVD-15-1000		L10D1	JL-210	10GAB-D1S 10% *	10%
C53	4700		22-14	DI-4700		L10D47	JL-247	5GA-D47S 10% *	10%
C54	.01	600	22-1843					5GA-S1S 10% *	10%
C55	.0068	400	22-2501	P488N-0068				5BF-D68	10%
C56	.033	400	22-2635	P488N-033				5BF-S33	10%
C57	.1	400	22-2061	P488N-1				5BF-P1	10%
C58	.033	400	22-2635	P488N-033				5BF-S33	10%
C59	.047	200	22-1778	P288N-047	DF-502	CUB2S47	GEM-4147	2TM-S47	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C80A	100		22-22	BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
B	100			BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
C81	4700		22-14	DI-4700		L10D47	JL-247	5GA-D47B 10% *	10%
C82	4700		22-14	DI-4700		L10D47	JL-247	5GA-D47B 10% *	10%
C83	1000	1000	22-17	DI-1000		L10D1	JL-210	10GAS-D1B 10% *	10%
C84	047	200	22-1778	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C85	330		22-2667			SR5T33		MS-333	10%
C86	.1	200	22-1777	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C87	1100		22-2859	1464-0011		1R5D11		MS-211	10%
C88	1500		22-13	DI-1500		L10D15	JL-215	5GA-D15B 10% *	10%
C89	4700		22-14	DI-4700		L10D47	JL-247	5GA-D47B 10% *	10%
C70A	1000		22-21	BPD-2X001	DD2-102	BYC5DDN	B-210	5BK-210	
B	1000						B-210		
C71	.01	400	22-1784	P488N-01				5BF-S1	10%
C72	.75	4000	22-2954						N750 10%
C73	.1	600	22-1841	P488N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C74	.45	4000	22-2858						10%
C75	.82	2000				HVD20Q82	2DY-482	20GAB-Q82S 10% *	10%

* Not normally in distributors stock. Available through distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	63-4010				PP28T16	Volume, Tap ② 1meg
B	Switch							Pull Type
R2A	2meg	½	63-4377	B-75	A47-1meg-S	QU-139	U56	Vert. Hold
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R3A	250K	½	63-3572	B-50	QU-130	U46		Brightness, Tap ② 10K
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R4	30K	½	63-4066					Contrast, Tap ① 10K
R5A	1meg	½	63-4398	B-855	A47-3meg-S	QU-140	U59	Base, Note 1
B	Shaft			Not Req.	KS-3	Not Req.	Not Req.	
R6A	1meg	½	63-4399	B-70	A47-1meg-Z	QU-137	U53	Treble, Note 2
B	Shaft			Not Req.	KS-3	Not Req.	Not Req.	
R7A	5meg	½	63-4012	AB-87	A47-5meg-Z	BU-141	PTA56L	Fringe Lock
B	Shaft			AK-1	FK3-1/4	TM-1	Not Req.	
R8A	3meg	½	63-4026	AB-84	A47-3meg-S	BU-140	TA34L	Focus
B	Shaft			AK-1	FK3-1/4	SK-2	Not Req.	
R9A	10K	½	63-4095	AB-14	A47-10K-S	BU-116	TA14L	AGC Delay
B	Shaft			AK-1	FK3-1/4	SK-2	Not Req.	
R10A	1500Ω	½	63-2920	AB-6	A47-1500-S	BU-109	PTA52L	Vert. Lin.
B	Shaft			AK-1	FK3-1/4	SK-2	Not Req.	
R11A	7.5meg	½	63-2919	AB-89	A47-7.5meg-S	QU-142	PTA855L	Vert. Size
B	Shaft			AK-1	FK3-1/4	RQ	Not Req.	
R12	750Ω	2(WW)	63-3284		39-500-50			Buzz Control

Note 1. Alternate Part #63-4013 may be used in Models B2328R, B2330E, R, B2335, E, R, B3013, H, R, B3013E, B4012H, R.
Note 2. Alternate Part #63-4014 may be used in Models B2329R, B2330E, R, B2335, E, R, B3012H, R, B3013H, B4012H, R.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R13	2.2meg		63-1936	
R14	680K			
R15	1meg		63-1911	
R16	1000Ω		63-1785	
R17	22K		63-2946	
R18	22K		63-2946	
R19	1500Ω		63-1792	
R20	56Ω		63-1732	
R21	120K		63-1873	
R22	120K		63-1873	
R23	33K		63-4006	
R24	22Ω		63-1715	
R25	220Ω		63-1757	
R26	220Ω		63-1757	
R27	8200Ω	3	63-4098	
R28	120Ω		63-1747	
R29	2700Ω		63-1803	
R30	68K		63-1862	
R31	1500Ω	4	63-4058	
R32	330Ω		63-1785	
R33	22K	2	63-4403	
R34	1.5meg		63-1918	
R35	100K		63-1869	
R36	47K		63-1855	
R37	39K		63-1852	
R38	15Ω		63-1703	
R39	3900Ω		63-1810	
R40	150K		63-1878	
R41	220K		63-1884	
R42	180K		63-1880	
R43	56K 5%		63-1858	
R44	27K		63-1845	
R45	470K	1	63-2149	
R46	330K		63-1880	
R47	3.3meg		63-4090	
R48	100K		63-1869	
R49	15K		63-1834	
R50	22K	2	63-1856	
R51	100K		63-1869	
R52	10K		63-1827	
R53	390K		63-1894	
R54	680Ω		63-1779	
R55	470Ω		63-1772	
R56	27K	2	63-4093	
R57	2.2meg		63-1928	
R58	100K		63-1869	
R59	10K		63-1827	
R60	3300Ω		63-1806	

ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R61	470Ω	1	63-3298	
R62	220Ω		63-1757	
R63	4700Ω		63-1813	
R64	150Ω		63-1878	
R65	47K		63-1855	
R66	220K		63-1884	
R67	8.2meg		63-4389	
R68	100K		63-1869	
R69	82K		63-1866	
R70	18K		63-1838	
R71	15K		63-1834	
R72	15K		63-1834	
R73	6800Ω		63-1820	
R74	270K	1	63-3159	
R75	2200Ω			
R76	1.5meg		63-1918	Note 1
R77	330K		63-1890	
R78	270K		63-1887	
R79	18K		63-1838	
R80	220Ω		63-1757	
R81	1.2meg		63-1915	
R82	330Ω	1	63-3286	
R83	8200Ω		63-1824	
R84	560Ω	1	63-3348	
R85	560Ω			
R86	560Ω			
R87	100K		63-1869	
R88	100K		63-1869	
R89	1meg		63-1911	
R90	100K		63-1869	
R91	68K		63-1862	
R92	390Ω		63-1788	
R93	10K	2	63-2145	
R94	22K		63-1842	
R95	39K		63-1852	
R96	180K	1	63-2313	
R97	18K		63-1838	
R98	100Ω		63-1744	
R99	1meg		63-1911	
R100	100Ω		63-1744	
R101	82000Ω	4	63-3602	
R102	1000Ω		63-1785	
R103	56K	2	63-3341	
R104	150K		63-1877	
R105	8.2Ω		63-3205	
R106	22K	1	63-1055	
R107	330K		63-3607	

Note 1. Some versions may use a 1.2meg in this application.

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA ZENITH PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1A	1st Video IF	S-43892					
B	41.25MC Trap						
L2A	39.75MC	S-41883					
B	47.25MC Trap						
L2A	2nd Video IF	S-43443					
B	47.25MC Trap						
L4	3rd Video IF	S-41891	17-4523 *	TV-130 *	6134 *	VF-3 *	
L5	4th Video IF	S-41898					Includes M2
L6	Series Peaking Coil	S-41879	19-3075	TV-186	6172		81 Microhenries
L7	Shunt Peaking Coil	S-43619	19-3180	TV-184	6180	VF-5	171 Microhenries
L8	RF Choke	S-32488	19-1004	BC-565	4810		8.7 Microhenries
L9	Shunt Peaking Coil	S-16011	19-3250	TV-185	6181	VF-6	250 Microhenries
L10	Series Peaking Coil	S-43616	19-3180 ▲	TV-184 ▲	6180 ▲	VF-5 ▲	170 Microhenries, wound on 56000Ω resistor
L11	1st Sound IF	S-42153			TV-130		
L12	2nd Sound IF	S-42054			TV-149 ♦		
L13	Quadrature Coil	S-16020	20-1005 *	TV-131 *	1480 *		
L14	RF Choke	S-32777	19-1005	BC-566	4812		10.4 Microhenries

▲ Parallel with 5600Ω resistor. ♦ Remove 470mmf capacitor (C56) from circuit. * Drill new mounting hole.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No	NOTES
L15	165Ω		S-19743		TV-169	6324		HS-6	Horiz. Freq. tapped ② 65Ω

FILTER CHOKE

ITEM No	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ^A)	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L16	.280A	52Ω	1.4 Hy.	95-1559	C5037	C-2996		C-2326	26C44	C-23X

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ZENITH PART No.	QUAM PART No.	NOTES
SP1	8"	PM	6-8Ω	49-827 ⑫	8A2126.4 ②	① Two used in Models B2330E, EU, EUD, R, RU, RUD,
SP2	8"	PM	6-8Ω	49-827 ⑫	8A2126.4 ③	B2335, E, EU, RUD, R, RU, RUD, U, UD. One used in
	5 1/4"	PM	6-8Ω	49-813 ③		Models B2329R, RU, RUD
		PM		49-832 ④		② Parallel and phase.
		PM		49-831 ⑤		③ Used in Model B2329R, RU, RUD
		PM		49-830 ⑥		④ Used in Models B2358E, EU, EUD, R, RU, RUD,
	3" x 4"	Electrostatic		S-23829 ⑦		B3010E, H, R, B3014H, R
						⑤ Two used in Models B2359, E, EU, EUD, U, UD,
						B2360M, MU, MUD, R, RU, RUD, B3011, E, Y, B4007E,R
						⑥ Two used in Models B3012H, R, B3013H, B4012H, R
						⑦ Two used in Models B2358E, EU, EUD, R, RU, RUD,
						B2359, E, EU, EUD, U, UD, B2360M, MU, MUD, R,
						RU, RUD, B3010E, H, R, B3011, E, Y, B3012H, R,
						B3013H, B4007E, R, B4012E, R

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
T1	117V @3.05A	580VCT @.280A	5V @3.8A	95-1561						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @10.4A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
T2	Vert. Output	95-1558	ZI900 ①	A- 2823	V316 ②		A-8146 ②		A-117X
T3	Yoke-Horiz. (33MH) (90°)-Vert. (42MH)	95-1560	DF608 ③④⑤	MDF-91 ③④⑤	Y90F12/47 ③④⑤		DY-13A ③④⑤	Y-39	Y-40 ④ NW4 ④ YC-1 ⑥ CL-1
	Rear Cover ⑥ Centering Device	S-43091							
	Alt. Rear Cover ⑥ Centering Device	S-23237							
T4	Horiz. Output	S-41988					HO-269 ⑤ *		

① Connect as autoformer. Use 7 : 1 turns ratio.
② Cut and tape blanking lead.
③ Cut and form a piece of .010 gauge tin paper inside the yoke itself and support with an acetate cement, to provide an insulation between the width sleeve and the yoke proper.
④ Connect yoke terminal #3 to terminal #3 of T4, yoke terminal #7 to R103, yoke terminal #1 to terminal #1 of T4. Connect damping capacitor across yoke terminals #3 and #7.
⑤ Use original rear cover and centering device, and width sleeve.
⑥ Use original mounting bracket.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5					7		
4					6		
3					5		
2					4		
1					1		
Special Notes →					⑦		

⑦ If insufficient width, connect approximately 50mmf ② 4KV MINIMUM across capacitor (C72).

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T5	7500Ω	3-4Ω	95-1613	ZI112	A-3020①	AU-804 ①	A-3849 ①	26S48 ①	S-8X	① Drill new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	N	7/10A 250V S/B	136-38	62-19	333.600 (N 6/10A-125V-S/B)	340010	N 7/10	HN 1/2 to 3/4

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA ZENITH PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M2	1N64	103-23	1N64	1N295	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Lamp		#39 VHF Indicator
M4	Lamp		#47 UHF Indicator (UHF Models only)
M5	Tuner	175-107	VHF, With UHF Provisions Ch. 19B20U, UD
	Tuner	175-108	VHF Ch. 19B20, Q
M6	Tuner	175-4	UHF Ch. 19B20UD
	Tuner	175-2	UHF Ch. 19B20U
M7	Width Sleeve		
M8	Magnet	S-41993	Anti-Pincushion (2 used)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

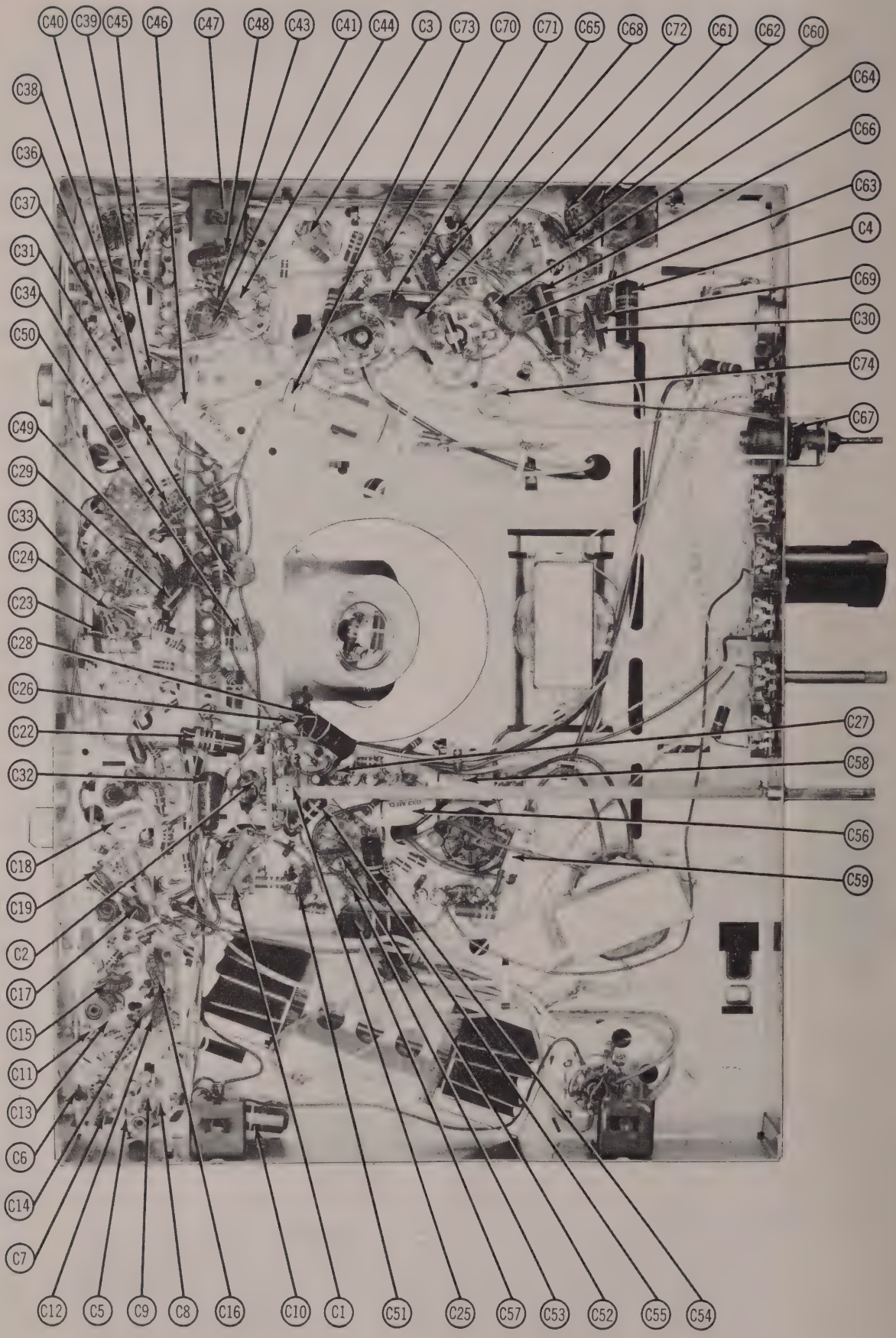
NAME	PART NO.	DESCRIPTION
Safety Glass	192-239	Models B2329R, RU, RUD, B2330E, EU, EUD, B2330R, RU, RUD, B2335, E, EUD, R, RU, RUD, U, UD, B2358E, EU, EUD, RU, RUD
Safety Glass	192-263	Models B3010E, H, R, B3011, E, Y, B3012H, R, B3013H, B3014H, R, B2359, E, EU, EUD, B2360M, MU, MUD, R, RU, RUD
Safety Glass	192-344	Models B4007E, R, B4012E, R
Knob	46-2003	Channel Selector, Models B2329R, RU, RUD, B2330E, EU, EUD, R, RU, RUD, B2335, E, EU, EUD, R, RU, RUD, U, UD, B2358E, EU, EUD, R, RU, RUD, B2359, E, EU, EUD, B2360M, MU, MUD, R, RU, RUD, B4007E, R, B4012H, R
Knob	46-3763	Channel Selector, Models B3010E, H, R, B3011, E, Y, B3012E, R, B3013H, B3014H, R
Knob	46-3766	Fine Tuning, Models B2329R, RU, RUD, B2330E, EU, EUD, R, RU, RUD, B2335, E, EU, EUD, R, RU, RUD, U, UD, B2358E, EU, EUD, R, RU, RUD, B2359, E, EU, EUD, U, UD, B2360M, MU, MUD, R, RU, RUD, B4007E, R, B4012E, R
Knob	S-44006	Fine Tuning, Models B3010E, H, R, B3011, E, Y, B3012H, R, B3013H, B3014H,R
Knob	S-43780	UHF Dial
Knob	46-1970	Volume, Models B2329R, RU, RUD, B2330E, EU, EUD, R, RU, RUD, B2335, E, EU, EUD, R, RU, RUD, U, UD, B2358E, EU, EUD, R, RU, RUD, B2359, E, EU, EUD, U, UD, B2360M, MU, MUD, R, RU, RUD, B4007E, R, B4012E, R
Knob	S-43493	Volume, Models B3010E, H, R, B3011, E, Y, B3012H, R, B3013H, B3014H, R
Knob	S-43672	Brightness, Vert. Hold
Knob	S-43482	Contrast
Knob	46-1118	Horiz. Hold
Knob	46-1807	Tone, 2 used
Cabinet	14-2352	Models B2329R, RU, RUD
Cabinet	14-2345	Models B2330E, EU, EUD
Cabinet	14-2344	Models B2330R, RU, RUD
Cabinet	14-2470	Model B2335, U, UD
Cabinet	14-2470E	Models B2335Y, EU, EUD
Cabinet	14-2470R	Models B2335R, RU, RUD
Cabinet	14-2306E	Models B2358E, EU, EUD
Cabinet	14-2306R	Models B2358R, RU, RUD
Cabinet	14-2483	Model B2358, U, UD
Cabinet	14-2483E	Models B2359E, EU, EUD
Cabinet	14-2483M	Models B2360M, MU, MUD
Cabinet	14-2483R	Models B2360R, RU, RUD
Cabinet	14-2487E	Model B3010E
Cabinet	14-2487H	Model B3010H
Cabinet	14-2487R	Model B3010R
Cabinet	14-2489	Model B3011
Cabinet	14-2489E	Model B3011E
Cabinet	14-2489Y	Model B3011Y
Cabinet	14-2295H	Model B3012H
Cabinet	14-2295R	Model B3012R
Cabinet	14-2303H	Model B3013H
Cabinet	14-2278H	Model B3014H
Cabinet	14-2278R	Model B3014R
Cabinet	14-2490E	Model B4007E
Cabinet	14-2490R	Model B4007R
Cabinet	14-2376H	Model B4012H
Cabinet	14-2376R	Model B4012R

WIRING DATA

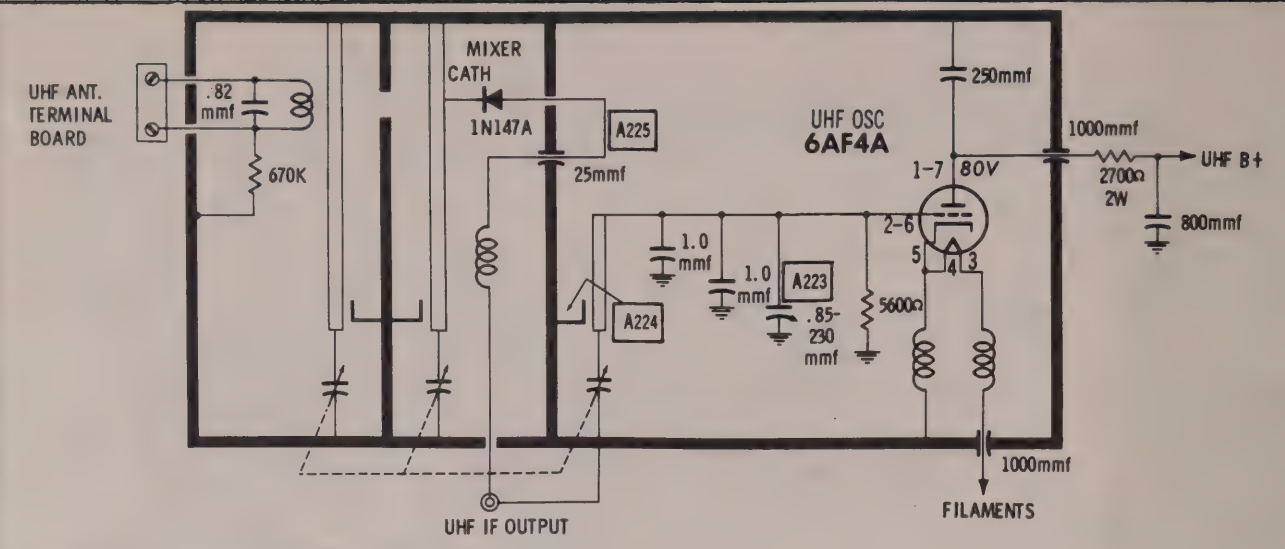
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8235
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8464 (Round) - 4 Conductor 8465 (Round) - 5 Conductor 8468 (Round) - 8 Conductor

ZENITH CHASSIS 19B20, Q, U, UD

FOLDER 3



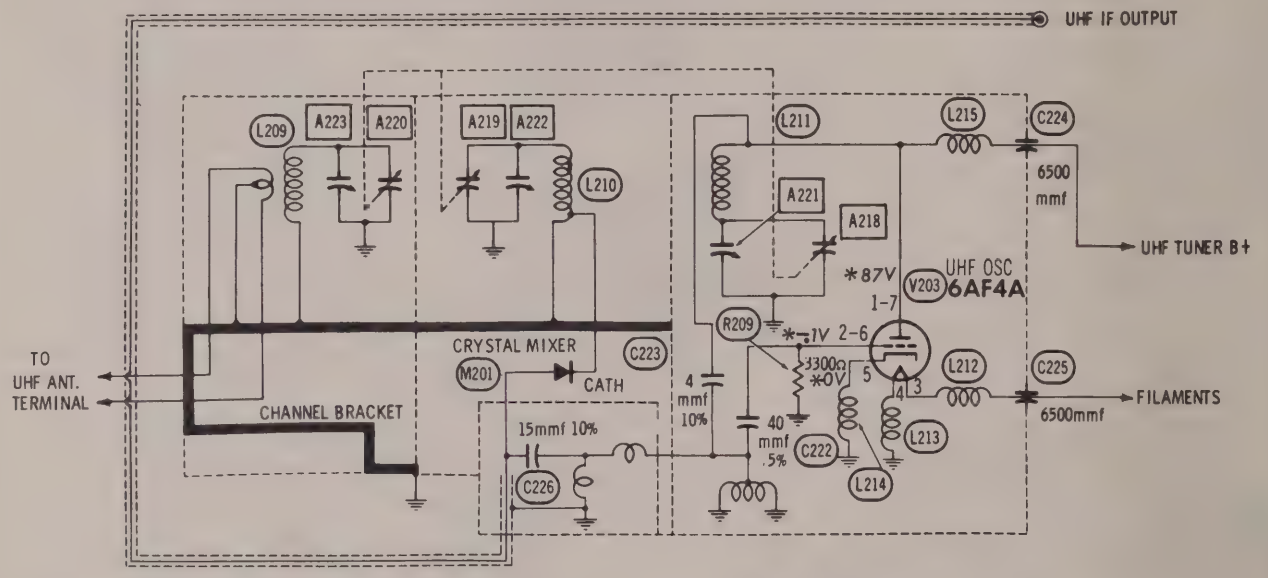
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

UHF TUNER 175-2

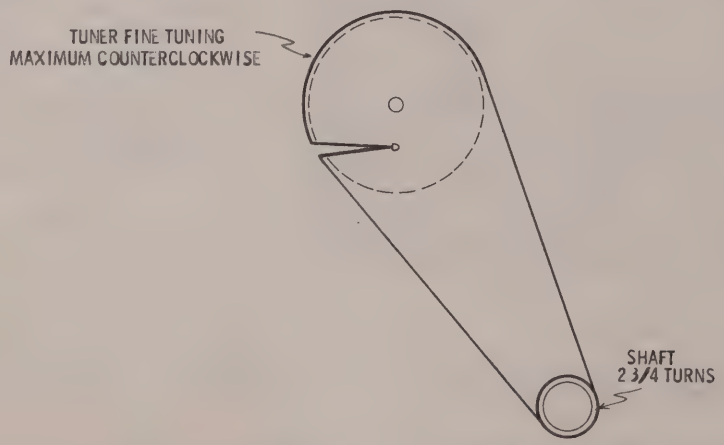


A PHOTOFACT STANDARD NOTATION SCHEMATIC

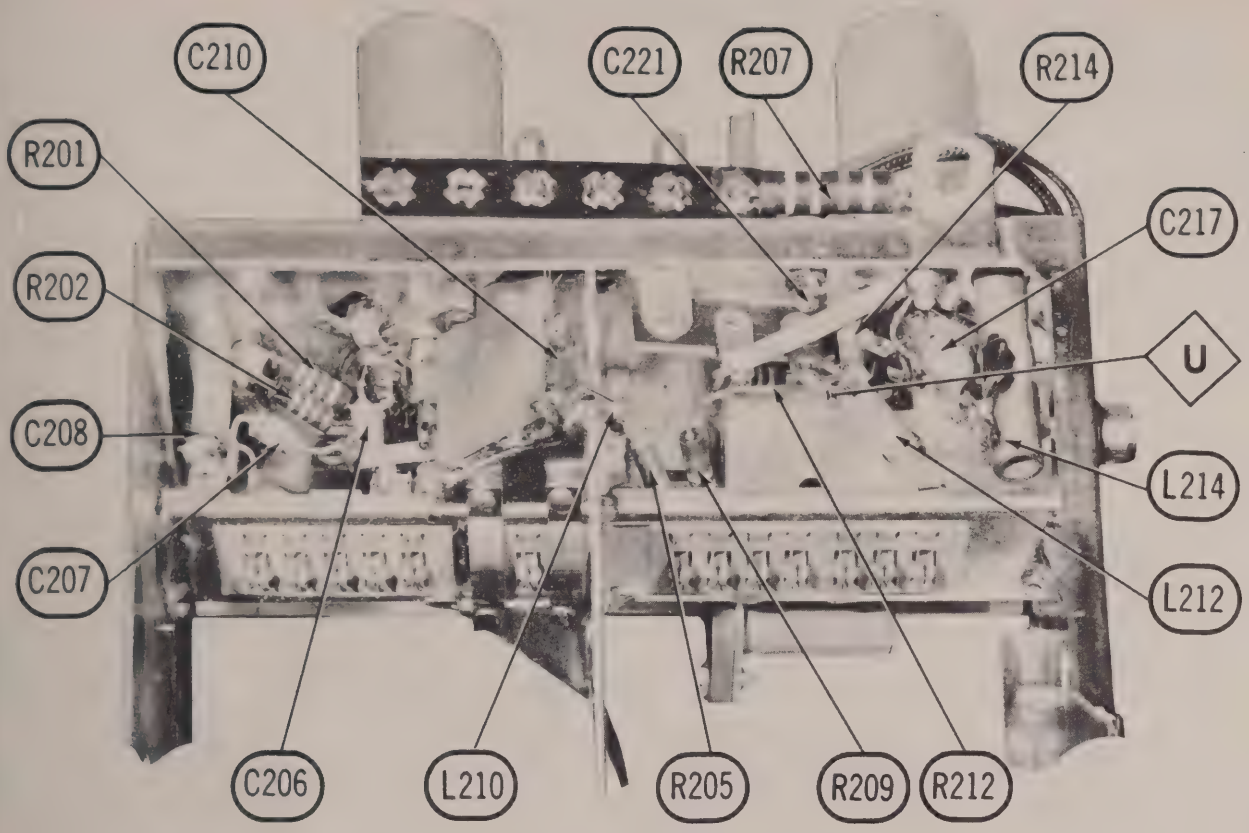
© Howard W. Sams & Co., Inc. 1959

* MEASURED IN UHF POSITION

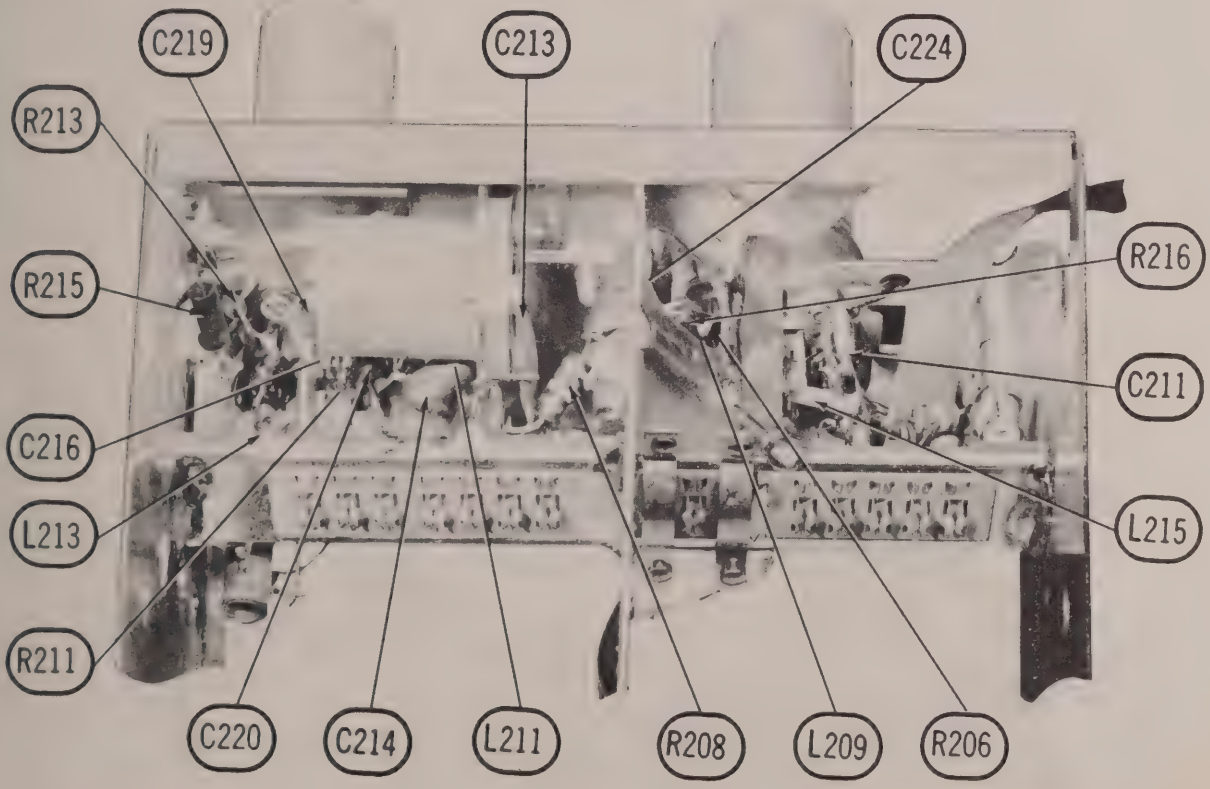
UHF TUNER 175-4



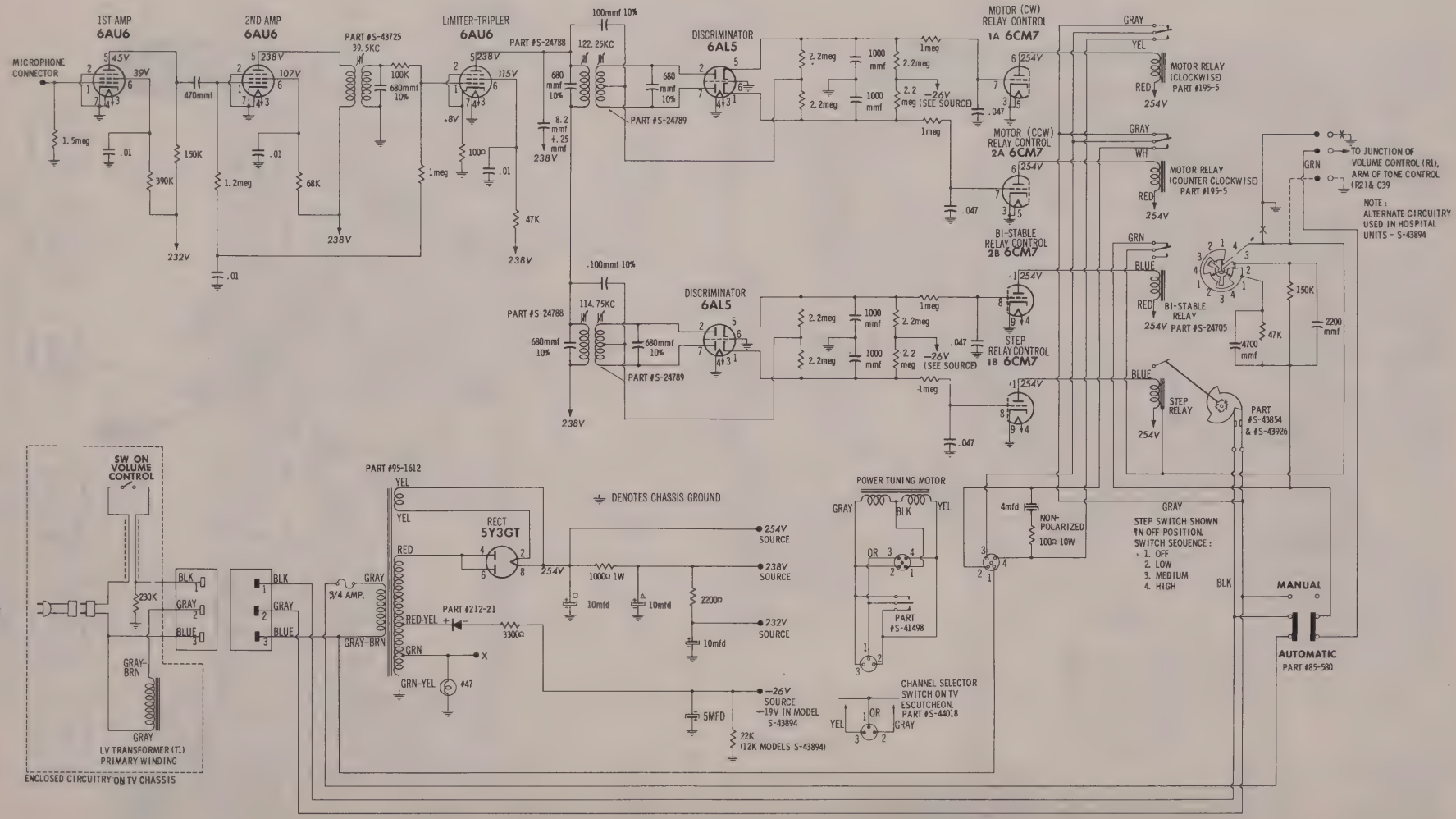
FINE TUNING DRIVE CORD STRINGING



TUNER 175-107 - LEFT SIDE



TUNER 175-107 - RIGHT SIDE



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

REMOTE CHASSIS S-43724, S-43894

TUNER PARTS LIST AND DESCRIPTIONS

175–108

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BK7B	
V202	Mixer-Osc.	6EA8	6U8 *

* Alternate.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	40		22-2511		D6-400				5%
C202	40		22-2511		D6-400				5%
C203	40		22-2511		D6-400				5%
C204	40		22-2511		D6-400				5%
C205	1000		22-3018	EF-001	MFT-1000			503C-D1	
C206	800		22-2331	BPD-0008	DD-801	L10T8		5GA-T8	
C207	2.4		22-2596						5%
C208	2.5-6		22-2221						
C209	1000		22-3018	EF-001	MFT-1000			503C-D1	
C210	.85-2.3		22-2453						
C211	800		22-2331	BPD-0008	DD-801	L10T8		5GA-T8	
C212	1000		22-3018	EF-001	MFT-1000			503C-D1	
C213	120		22-2591		DTN-120				5%
C214	19		22-2406						2.5%
C125	.6-3		22-2504						
C216	1000		22-3018	EF-001	MFT-1000			503C-D1	
C217	2		22-2434						10%
C218	3.4		22-2592						±.25mmf
C219	5.6		22-2499						±.25mmf
C220	1000		22-3018	EF-001	MFT-1000			503C-D1	
C221	800		22-2577						
C222									
C223	2		22-2585						±.5mmf

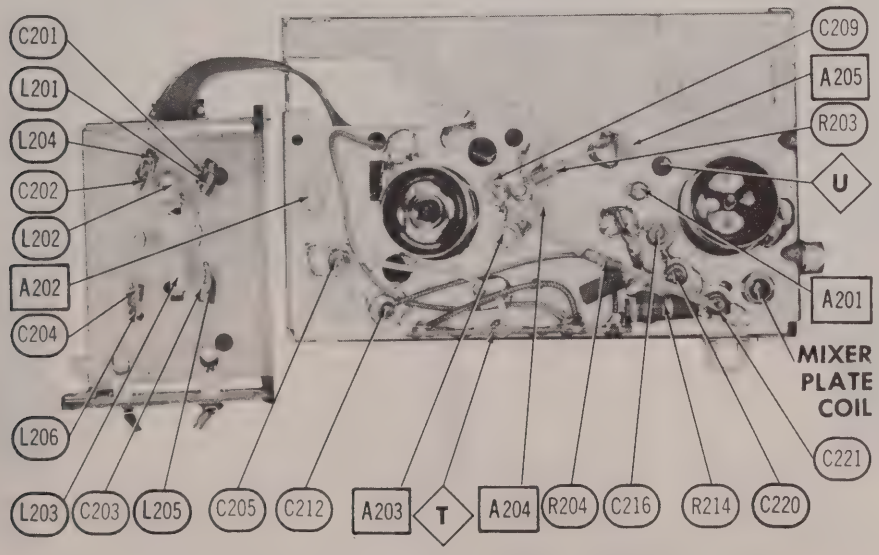
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

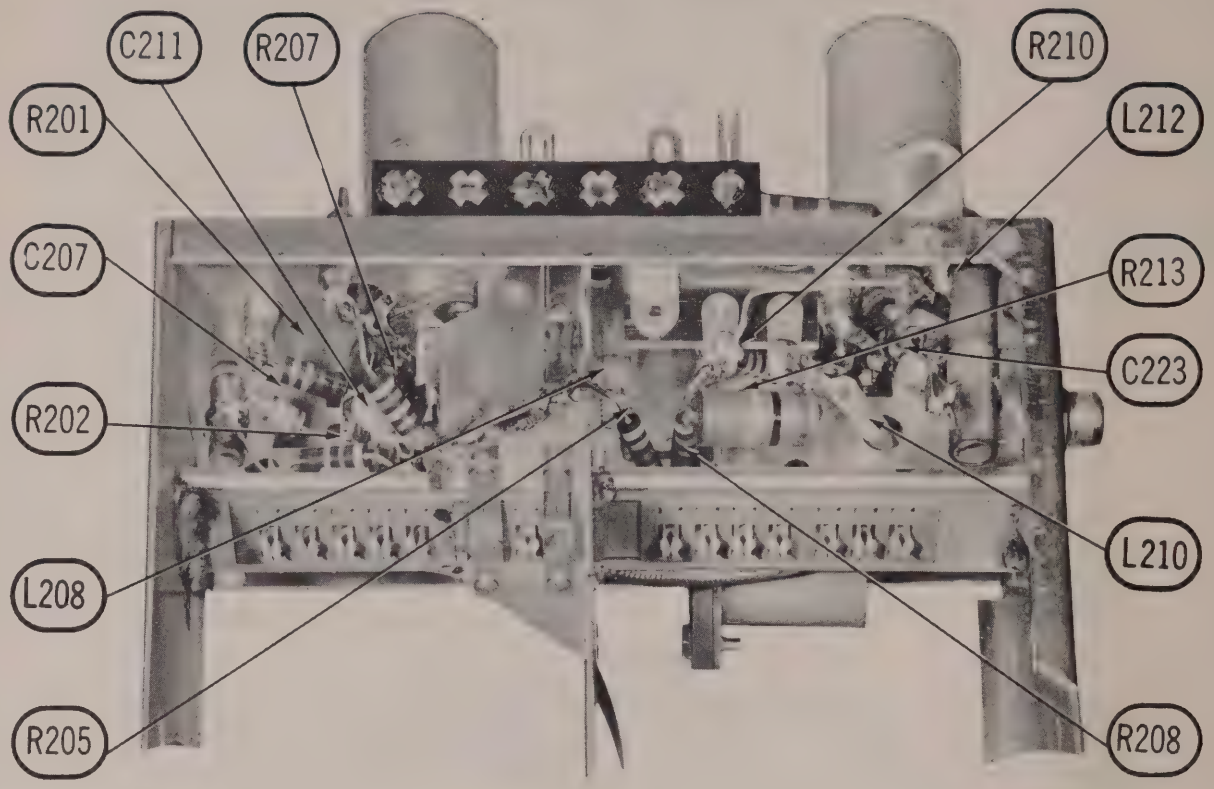
ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R201	22K			
R202	47K			
R203	220K			
R204	220K			
R205	4700Ω			
R206	10K			
R207	470K			
R208	470Ω			
R209	68K			
R210	68K			
R211	10K			
R212	2200Ω			
R213	10K	2	63-3170	
R214	470Ω	1	63-2398	

COILS (RF-IF)

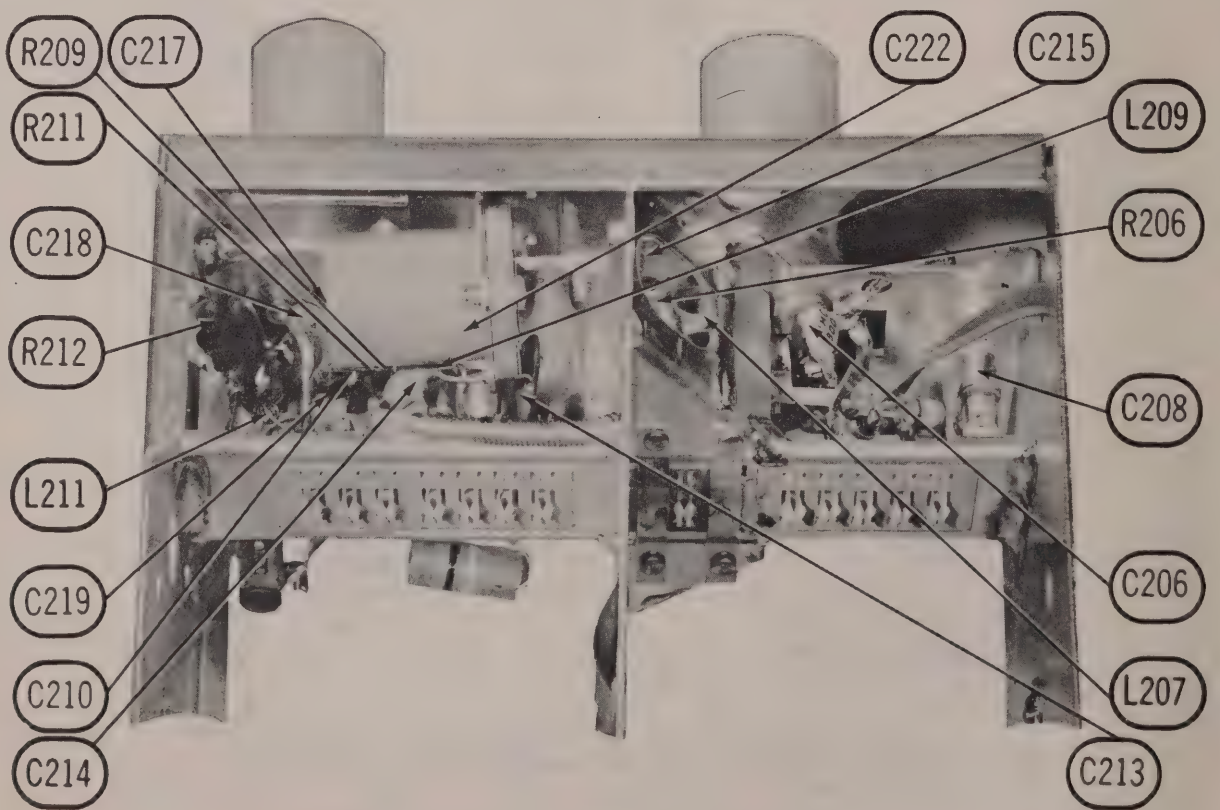
ITEM No.	USE	ZENITH PART No.	NOTES
L201	IF Trap Coil	20-490	
L202	IF Trap Coil	20-505	
L203	IF Trap Coil	20-505	
L204	IF Trap Coil	20-490	
L205	IF Trap Coil	20-490	
L206	IF Trap Coil	20-490	
L207	Neut. Coil	20-431	
L208	RF Coil	20-537	
L209	Mixer Grid Coil	20-538	
L210	RF Choke	S-18859	
L211	Osc. Coil	20-541	
L212	Mixer Plate Coil	S-22702	



TUNER 175–108 TOP VIEW

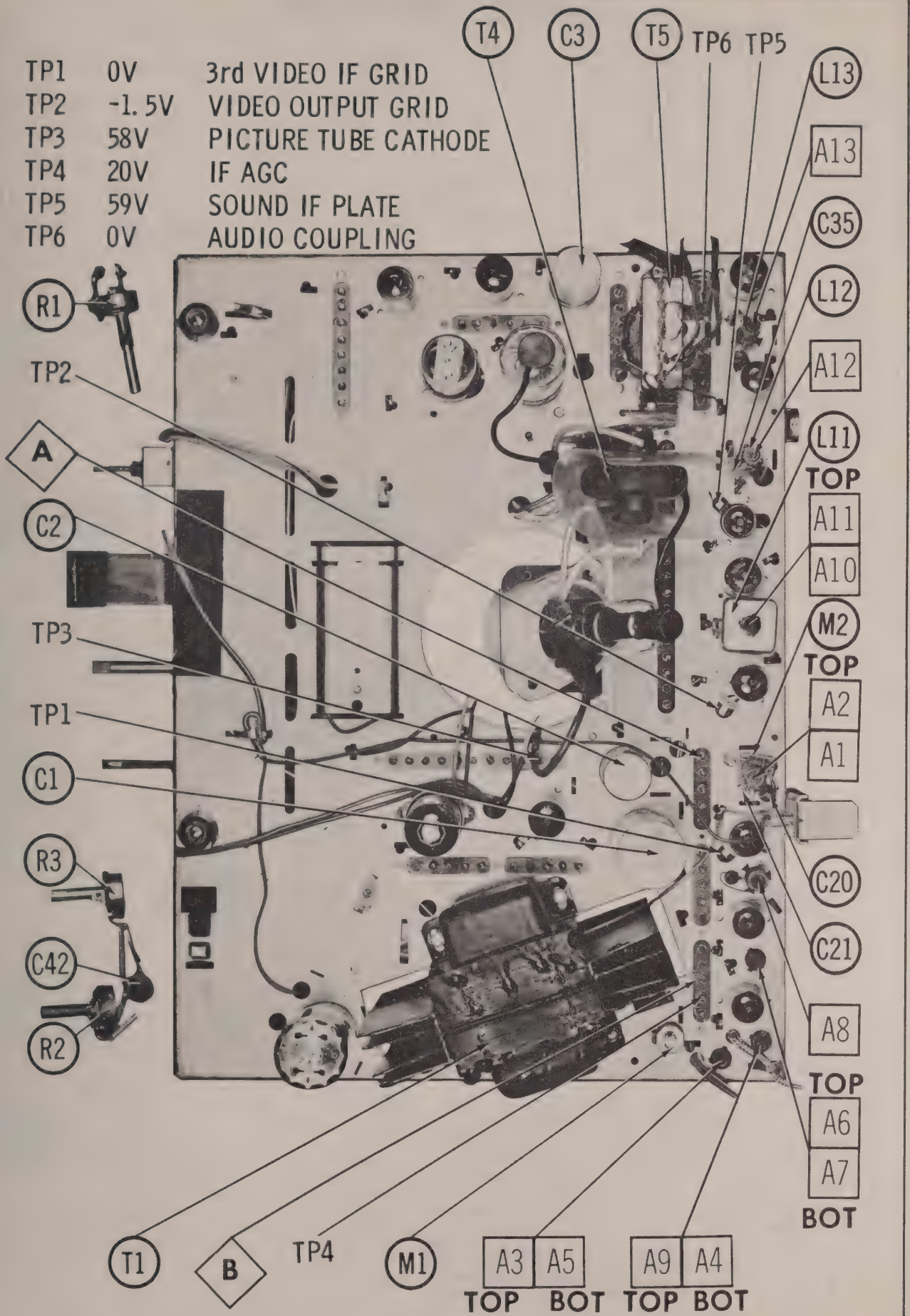


TUNER 175-108 - LEFT SIDE



TUNER 175-108 - RIGHT SIDE

TP1	0V	3rd VIDEO IF GRID
TP2	-1.5V	VIDEO OUTPUT GRID
TP3	58V	PICTURE TUBE CATHODE
TP4	20V	IF AGC
TP5	59V	SOUND IF PLATE
TP6	0V	AUDIO COUPLING



CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.6meg	1500Ω	.1Ω	0Ω	††240Ω	††240Ω	1500Ω		
V2	6BZ6	60K	††22Ω	.1Ω	0Ω	†220Ω	†220Ω	INF		
V3	6DK6	.1Ω	120Ω	.1Ω	0Ω	†8200Ω	†8200Ω	0Ω		
V4	12BV7	15Ω	2700Ω	15Ω	.1Ω	.1Ω	0Ω	†6500Ω	†22K	15Ω
V5	6BU8	• 7000Ω	†22K	650K	.1Ω	0Ω	115K	450K	†40K	†8.2meg
V6	6AU6A	100K	0Ω	.1Ω	0Ω	†37K	†37K	0Ω		
V7	6BN6	• 310Ω	.2Ω	.1Ω	0Ω	†27K	4.6Ω	†390K		
V8	EL84/ 6BQ5	13K	13K	220Ω	0Ω	.1Ω	NC	†1100Ω	NC	†470Ω
V9	6CG7	• ‡2.8meg	•2.5meg	0Ω	0Ω	.1Ω	‡325K	6800Ω	2200Ω	0Ω
V10	6CK4	TP	0Ω	1.2meg	NC	†740Ω	NC	.1Ω	• 750Ω	
V11	6CN7	0Ω	200K	100K	0Ω	.1Ω	390Ω	1.2meg	†68K	0Ω
V12	6CG7	‡235K	39K	0Ω	0Ω	.1Ω	†0Ω	32K	10K	NC
V13	6DQ6A	TP	.1Ω	NC	†8300Ω	1meg	TP	0Ω	0Ω	TOP CAP ‡11Ω
V14	6AU4GTA	TP	NC	¶200K	NC	†.9Ω	NC	0Ω	.1Ω	
V15	1J3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡281Ω
V16	5V3	NC	¶	TP	27Ω	NC	25Ω	TP	¶	
V17	21CXP4	.1Ω	27K	Pin 6 • ‡1.6meg	Pin 10 70K	Pin 11 • 220K	Pin 12 0Ω			
V201	6BK7B	†940Ω	115K	125K	0Ω	.1Ω	125K	3meg	0Ω	0Ω
V202	6EA8	†10K	68K	†68K	.1Ω	0Ω	†470Ω	0Ω	2200Ω	12K
V203	6AF4A	*†11K	5600Ω	.2Ω	.1Ω	.1Ω	5600Ω	†*11K		
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9

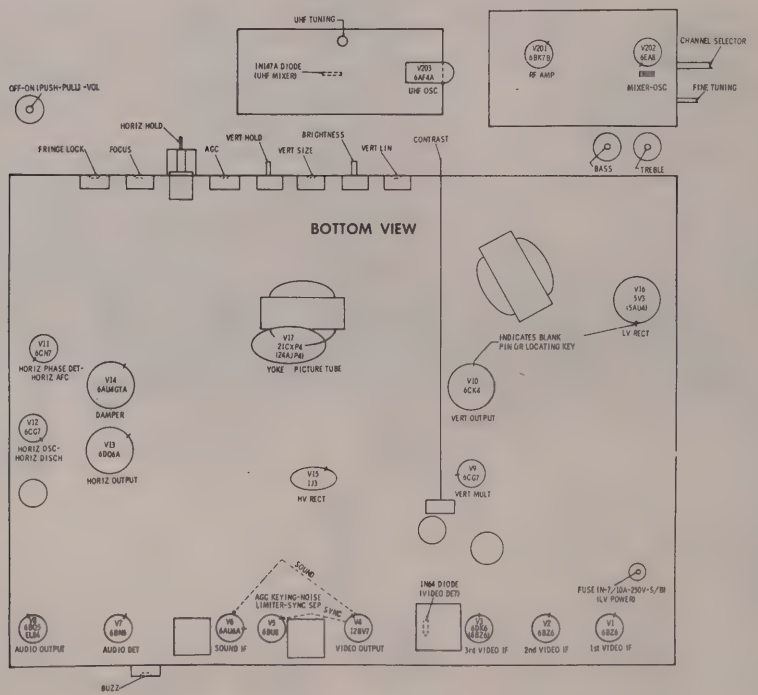
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION

† MEASURED FROM ¶270V SOURCE. * MEASURED IN "UHF" POSITION.

‡ MEASURED FROM PIN 3 OF V14. NC NO CONNECTION

†† MEASURED FROM PIN 7 OF V2. TP TIE POINT

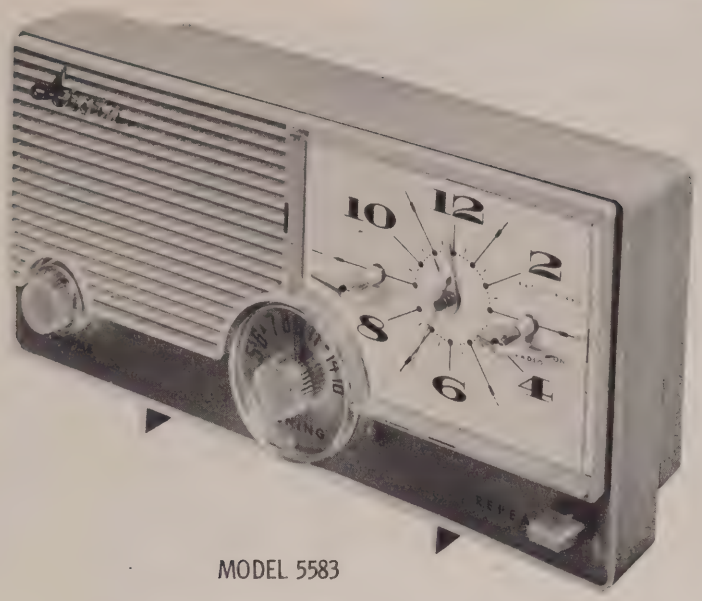


TUBE PLACEMENT CHART

PHOTOFACT* Folder
with CIRCUITRACE*

ARVIN MODELS 2584, 5583 (Ch. 1.44100, 1.44200)

ARVIN MODELS 2584, 5583 (Ch. 1.44100, 1.44200)



MODEL 5583

TRADE NAME	Arvin Models 2584 (Ch. 1.44100), 5583 (Ch. 1.44200)
MANUFACTURER	Arvin Industries Inc., Columbus, Indiana
TYPE SET	AC Operated AM Receiver (Clock Not Used In Model 2584)
TUBES	Five
POWER SUPPLY	110 - 120 Volts AC - 60 Cycles
RATING	28 Watts, .29 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	540-1650KC

ARVIN MODELS 2584, 5583 (Ch. 1.44100, 1.44200)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Suggested alignment tools:
A1, A2, A3, A4, A6.....General Cement #8606, 8606L
Walsco #2543, 2544
A5, A7.....General Cement #8290, 9291, 9105, 9106, 8821, 8607, 5066, 5008, 5004, 5000
Walsco #2520, 2515, 2512, 2538, 2522, 2537, 2523, 2525

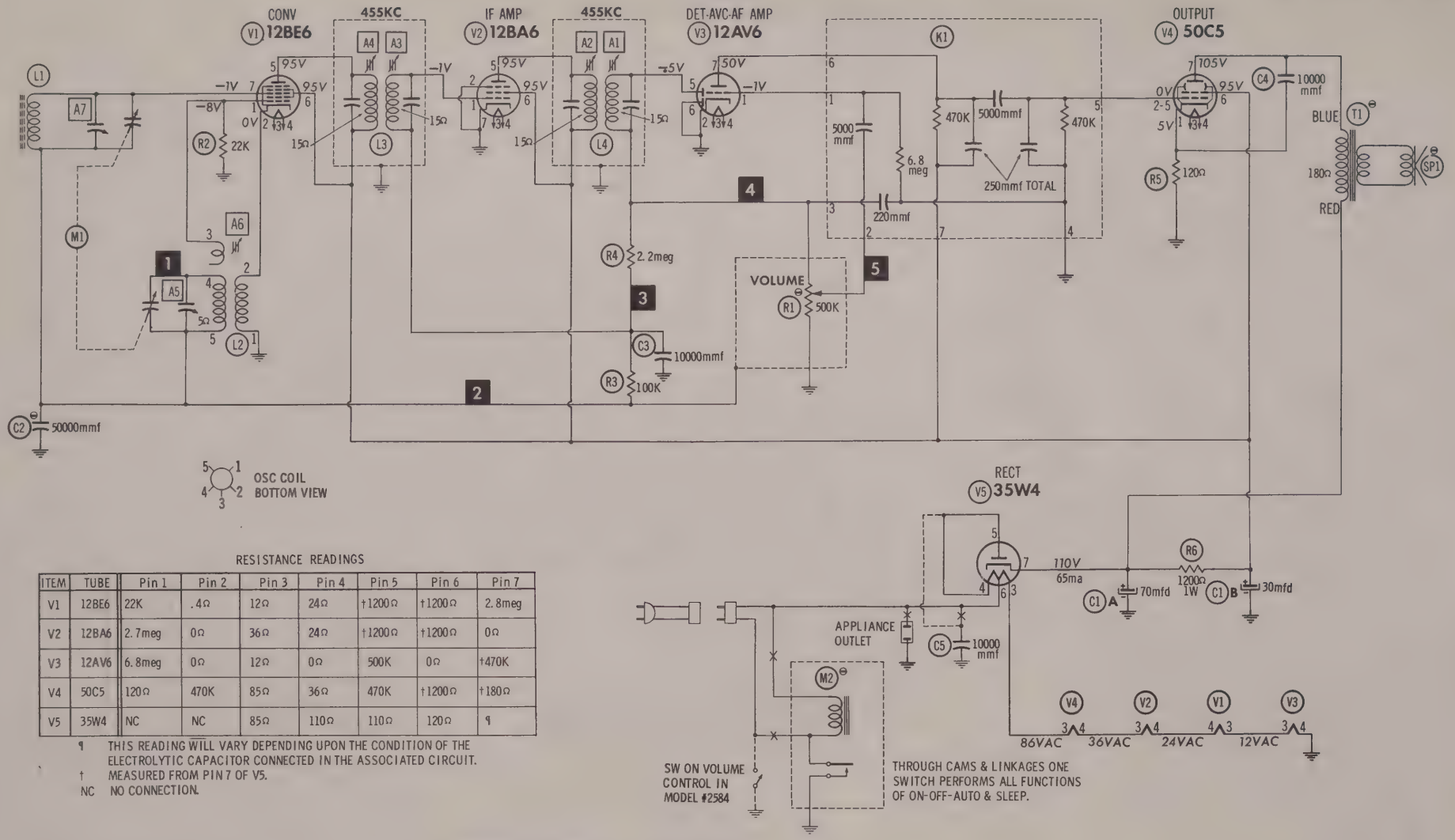
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to antenna Stator lug of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.		Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	600KC	"	A6	Adjust for maximum output while rocking tuning gang. Repeat Steps 2 & 3.
4.		"	1400KC	Tune for 1400KC signal	"	A7	Adjust for maximum output.
	Steps 5 & 6 are not necessary unless receiver fails to track properly.						
5.		"	1000KC	Tune for 1000KC signal	"		Adjust for maximum output by bending second set of segments of antenna section of tuning gang.
6.		"	600KC	Tune for 600KC signal	"		Adjust for maximum output by bending third set of segments of antenna section of tuning gang. Repeat Steps 2 thru 6.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H845

SET 430 FOLDER 4



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.4Ω	12Ω	24Ω	†1200Ω	†1200Ω	2.8meg
V2	12BA6	2.7meg	0Ω	36Ω	24Ω	†1200Ω	†1200Ω	0Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	120Ω	470K	85Ω	36Ω	470K	†1200Ω	†180Ω
V5	35W4	NC	NC	85Ω	110Ω	110Ω	120Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

©Howard W. Sams & Co., Inc. 1959

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ARVIN MODELS 2584, 5583 (Ch. 1.44100, 1.44200)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det-AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	B 70	150	44328-5 ①	PRS150V8040	BBRD8415	WD220	TDLD-10	CADP-513	R2739 *
B	C 30	150							

① Model 2584 uses a 50-30mfd in this application (Part #44328-4).
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	50000			BPD-05	DF-503			5HK-S5	①
C3	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C4	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C5	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

① Some versions use 10000mmf in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	½	45250-5					Volume Note 1

Note 1. Part #45250-3 used in Model 2584 (with switch).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ARVIN PART No.	NOTES
	OHMS	WATT		
R2	22K			
R3	100K			
R4	2. 2meg			

ITEM No.	RATING		ARVIN PART No.	NOTES
	OHMS	WATT		
R5	120Ω			
R6	1200Ω	1		

COILS (RF-IF)

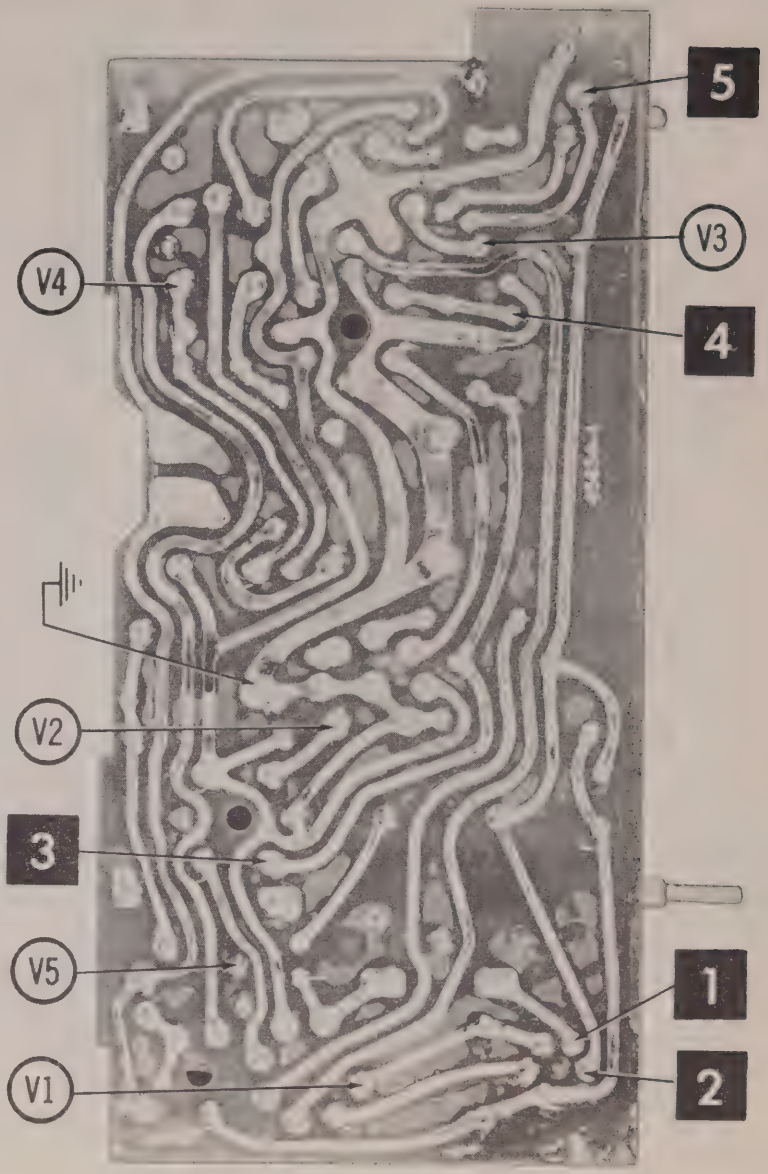
ITEM No.	USE	REPLACEMENT DATA					
		ARVIN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick	46262-1 ①					
L2	Osc. Coil	43644-1					
L3	Input IF	44282-1	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	44282-1	16-6780	BC-357	13-PC10	RF-4	

① Part #45534-3 used in Model 2584.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Con't)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	3-4Ω	46700-2 ① 42700-21 ②	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	① Used in Model 5583 ② Used in Model 2584

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	45599-1 ①	5A07	① Used in Model 5583
	4"	PM	6-8Ω	44088 ②	4A06Z8.1	② Used in Model 2584
	4"	PM	6-8Ω	44088 ②	4A06Z8.1	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ARVIN PART No.	REPLACEMENT DATA
K1	Audio Coupling Unit	5000mmf, 5000mmf, 250mmf, 220mmf, 470K, 470K, 6.8meg	43743-2	Aerovox PA-512 Centralab PC-158 Sprague DT-5

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Tuning Cap.	45654	2 Gang, Model 5583
	Tuning Cap.	45698	2 Gang, Model 2584
M2	Clock	45621-061	Model 5583
	Printed Board	45638-1	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

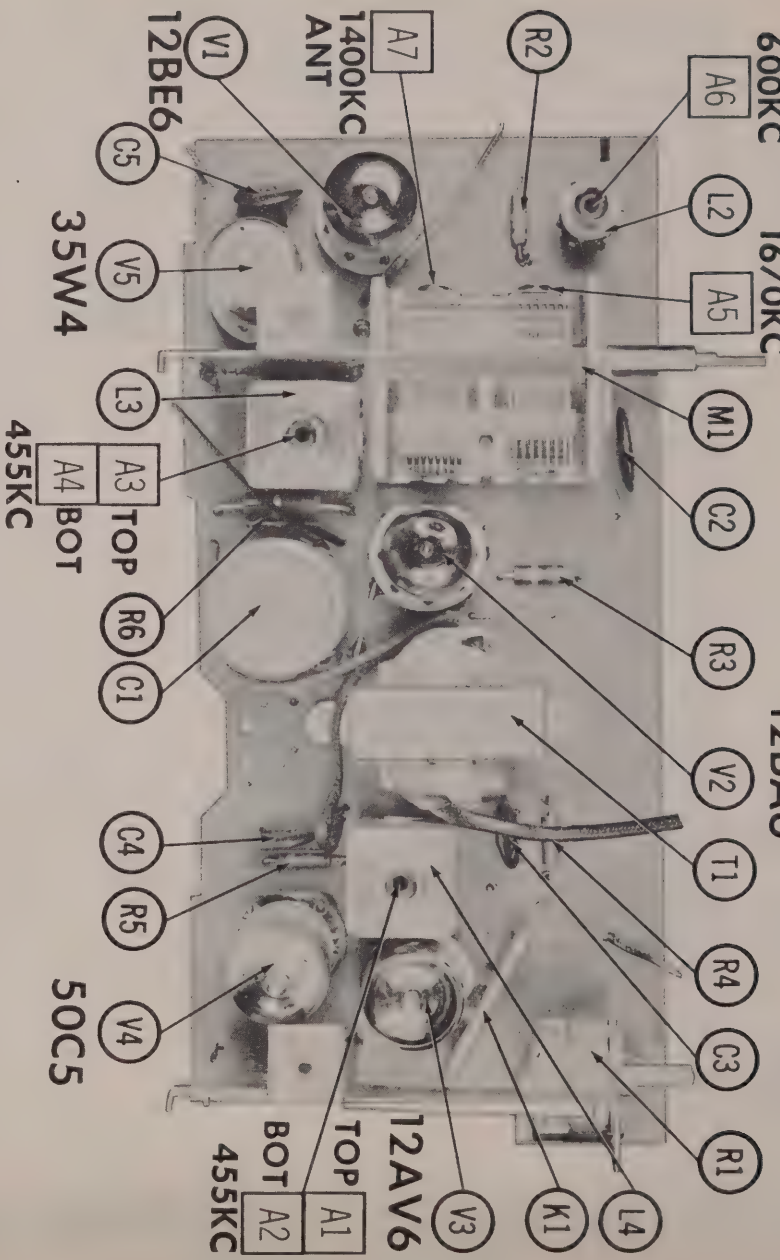
NAME	PART NO.	DESCRIPTION
Knob	45632	Tuning, Model 5583
Knob	45688-67	Tuning, Model 2584
Knob	45631	Volume, Model 5583
Knob	45752-67	Volume, Model 2584
Knob	45612-13	Doze Alarm, Pink, Model 5583
Knob	45612-35	Doze Alarm, Turquoise, Model 5583
Knob	45612-17	Doze Alarm, Ivory, Model 5583
Knob	45622	Clock, Model 5583
Cabinet Assembly	45609-13	Front, Pink, Model 5583
Cabinet Assembly	45609-35	Front, Turquoise, Model 5583
Cabinet Assembly	45609-17	Front, Ivory, Model 5583
Cabinet Back	45642-13	Back, Pink, Model 5583
Cabinet Back	45642-35	Back, Turquoise, Model 5583
Cabinet Back	45642-17	Back, Ivory, Model 5583
Cabinet Assembly	45684-67	Front, White, Model 2584
Cabinet Back	45683-19	Charcoal, Model 2584
Cabinet Back	45683-50	Gray, Model 2584
Pointer	45628	Model 5583
Clock Crystal	45616	Model 5583
Dial Scale	45694	Model 2584

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

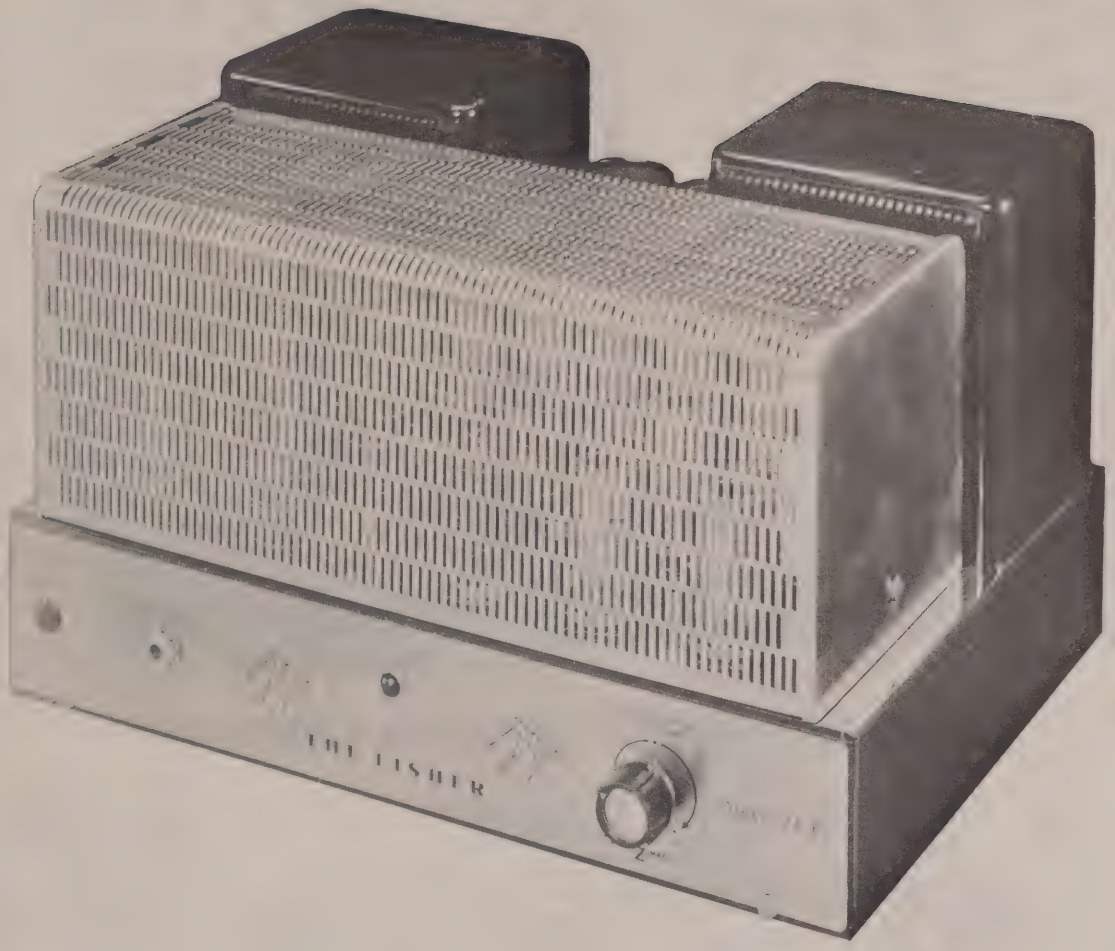
CHASSIS—TOP VIEW



PHOTOFACT* Folder

FISHER
MODEL 200

FISHER
MODEL 200



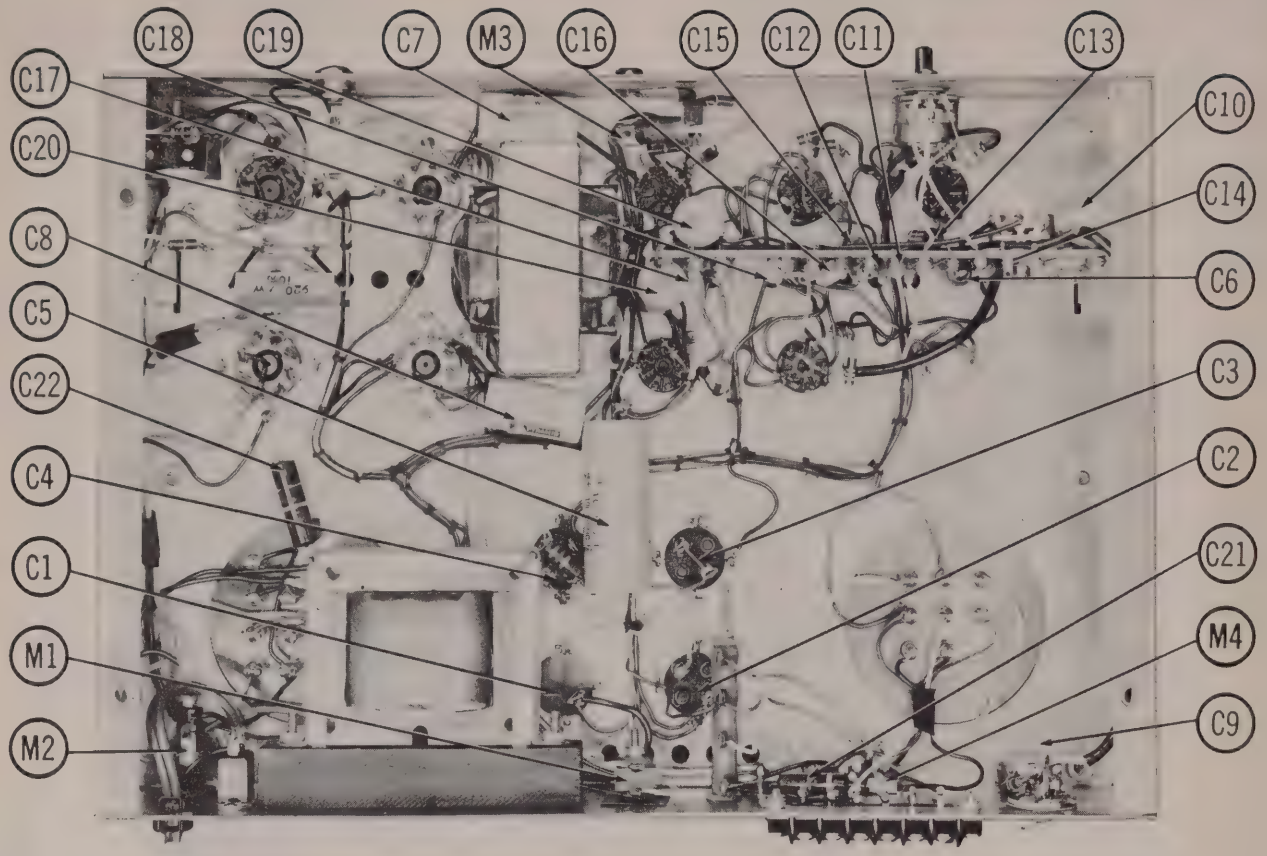
FISHER
MODEL 200

TRADE NAME	Fisher Model 200		
MANUFACTURER	Fisher Radio Corp., 21-21 44th Drive, Long Island City 1, N. Y.		
TYPE SET	AC Operated Audio Amplifier		
TUBES	Nine		
POWER SUPPLY	105-125 Volts AC, 50-60 Cycles	RATING	165 Watts, 1.7 Amp. @ 117 Volts AC

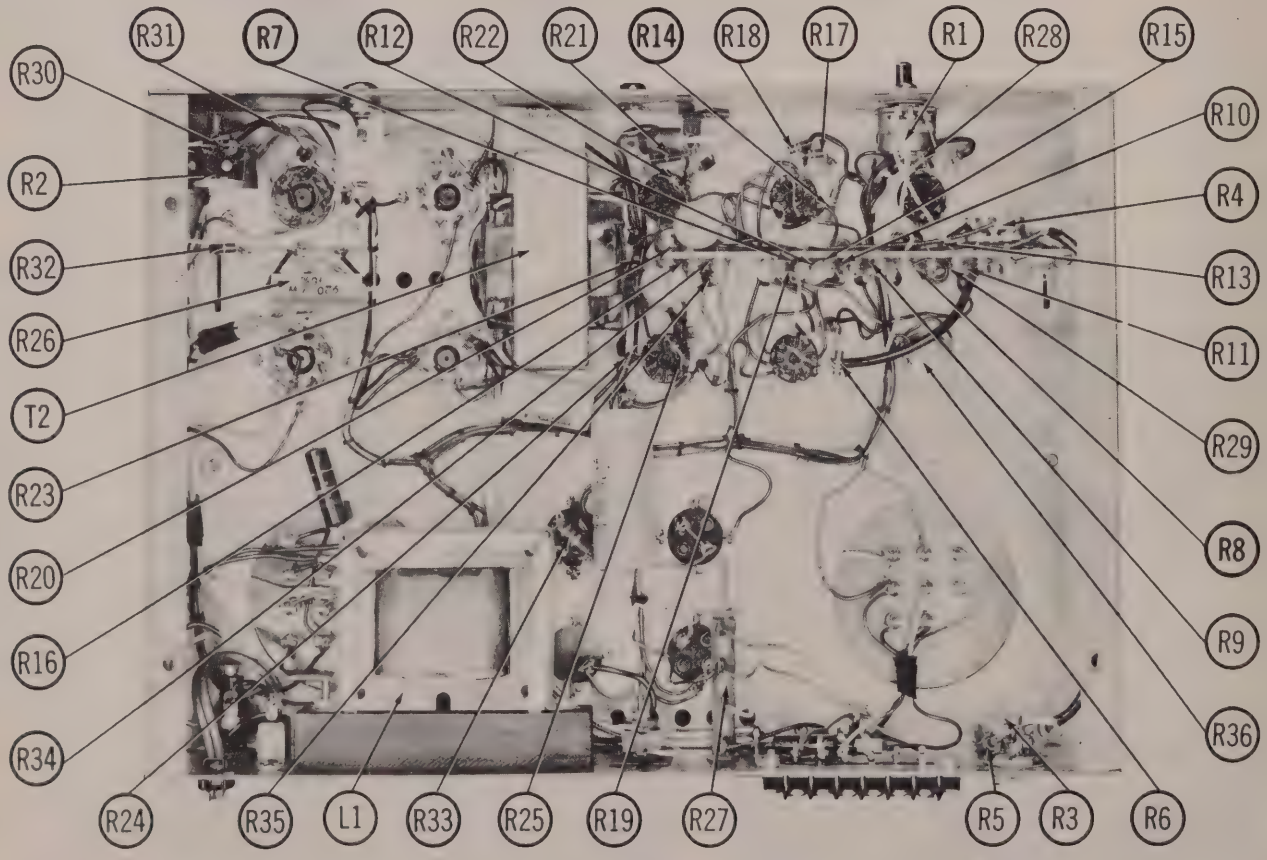
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H789



CHASSIS BOTTOM VIEW - CAPACITOR & MISC IDENT.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	AF Amp. - Phase Inverter	12AX7/ECC83 ①
V2	AF Amplifier	12AU7/ECC82 ①
V3	Driver	6CL6
V4	Driver	6CL6
V5	Output	EL34/6CA7 ①

ITEM No.	USE	TYPE
V6	Output	EL34/6CA7 ①
V7	Bias Control	12AU7/ECC82 ①
V8	Rectifier	GZ34/5AR4 ①
V9	Rectifier	GZ34/5AR4 ①

① Domestic types listed may not be directly interchangeable in some instances.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	80	500	C-507-117	AFH1-62	A0560	FP187	TMS-70	S-305	TVL-1958
C2A	▲40	450	C-1798	AFH2-57	B045	FP238	TMD-54	D-235	TVL-2764
B	■40	450							
C3A	▲40	450	C-1798	AFH2-57	B0450	FP238	TMD-54	D-235	TVL-2764
B	▲40	450							
C4A	▲20	100	C-507-118						
B	■20	100							
C	▲20	100							
C5	100	100	C-648-118	PRS150V100	BR10015	TC493	TD-100-150	MT-15100	TVA-1420
C6	100	15	C-548-121	PRS15V100	BBR100-15	TT15X100	TD-100-15	MTH-1510	TVA-1160
C7	20	150	C-3289	PRS150V20	BBR20-150	TC45	TD-20-150	MT-1520	TVA-1410
C8	20	150	C-3289	PRS150V20	BBR20-150	TC45	TD-20-150	MT-1520	TVA-1410

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

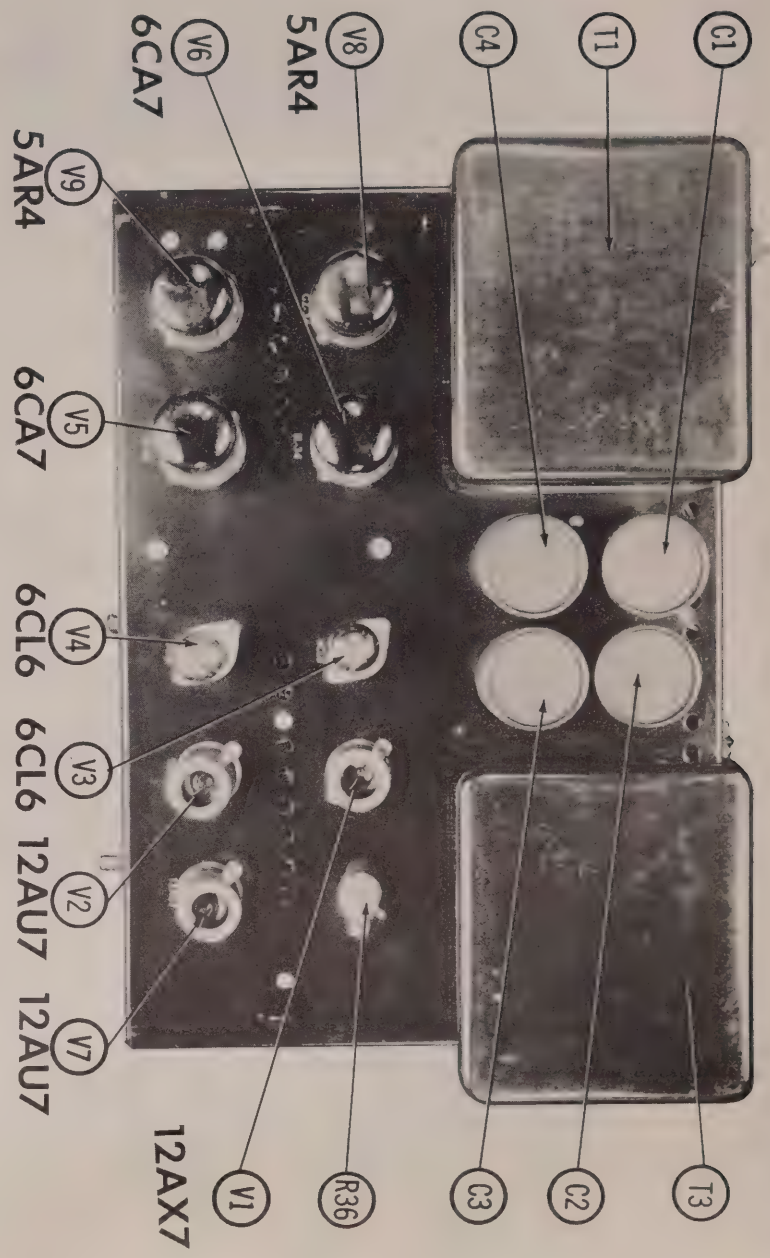
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C9	330		C-50072-1		MD-331	L10T33	JL-333		10%
C10	.22	400	C69P224V4				GEM-4022	5BF-P22	
C11	82		CC21GP820K5	NPO-SI 82	D6-820	L10Q82	CNO-482		10%
C12	420		CC21GP421K5						10%
C13	.01	400	C-3155	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C14	10		CC20CH100G5	NPO-SI 10	TCZ-10	CTA6Q1C	CNO-410	5TCC-Q1	NPO
C15	68		CC21GP680K5	NPO-SI 68	D6-680	CTA6Q68C	CNO-468	5TCC-Q68	10%
C16	.0047	400	C68P472K4				GEM-16247	5BF-D47	10%
C17	2.2		C-3039	NPO-SI 2.2	TCZ-2R2	CTA6V22C	CNO-522	5TCCB-V22	10%
C18	.0047	400	C68P472K4				GEM-16247	5BF-D47	10%
C19	.22	400	C69P224V4				GEM-4022	5BF-P22	
C20	.22	400	C69P224V4				GEM-4022	5BF-P22	
C21	.01	400	C-3155	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C22	.01	600	C-2747	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1000Ω	1/4	R-648-111					Damping Factor
B	Switch							Zmatic On-Off
R2A	10K	2(WW)	R-2815-11	WN-103 †	A43-10K	WPK10000	R10ML	Bias Adjust
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R3A	500K	1/4	R-2815-9	AB-59	A47-500K-S	Q11-133	U50	Level Adjust
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	
R4A	50K	1/4	R-50000-5	AB-31	A47-50K-S	Q11-123	SU-35	Phase Inverter Adjust
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	

† Use an extra mounting nut behind mounting surface.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	FISHER PART No.	NOTES
R5	10K		RC20BF103K	
R6	270K		RC20BF274K	
R7	680K		RC20BF684K	
R8	330Ω		RC20BF331K	
R9	1000Ω		RC20BF102K	
R10	2200Ω		RC20BF222K	
R11	4700Ω	1	RC30BF472K	
R12	47K		RC20BF473K	
R13	22K		RC20BF223K	
R14	470K		RC20BF474K	
R15	3.3meg		RC20BF335K	
R16	100K		RC20BF104K	
R17	10K		RC20BF103K	
R18	470K		RC20BF474K	
R19	10meg		RC20BF106K	
R20	100K		RC20BF104K	
R21	2.2meg		RC20BF225K	

ITEM No.	RATING OHMS	RATING WATT	FISHER PART No.	NOTES
R22	100Ω		RC20BF101K	
R23	3300Ω	2	RC40BF332K	
R24	2.2meg		RC20BF225K	
R25	100Ω		RC20BF101K	
R26	920Ω 10%	7	R-648-117	
R27A	1Ω	3.5	R-581-129	
B	1Ω	3.5		
C	.8Ω	3		
R28	120Ω		RC20BF121K	
R29	330Ω		RC20BF331K	
R30	5600Ω		RC20BF562K	
R31	1500Ω		RC20BF152K	
R32	1500Ω		RC20BF152K	
R33	270Ω	1	RC30BF271K	
R34	4700Ω		RC20BF472K	
R35	2200Ω	1	RC30BF222K	
R36	4000Ω	15	R-588-116	

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L1	.200A	100Ω	3.8 Hy.	L-507-113				C-2334	20C49	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.7A	1050VCT @ .200A Tap @ 43V @ .040A	5V @ 3.5A	T-588-112						
	SEC. 3		SEC. 4							
	6.3V @ 4.2A		6.3VCT @ .86A							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA FISHER PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	1	:1	T-507-123						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	3400Ω CT	70V Line. Taps @ 16Ω 8Ω, 4Ω	T-648-116							

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA FISHER PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.040A	SR-588-128	1234AH	T065 SD-92 ①	65A K200 ①	① Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA FISHER PART No. FUSE	FISHER PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	3 2/10A 125V S/B	F-3319	X-1036	31303.2 (3 2/10A 125V S/B)	342001	MDL3 2/10	HKP

MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M3	Lamp	I-50009-1	#47
M4	Switch	S-557-138	Impedance Matching (3 Position, Slide Type)

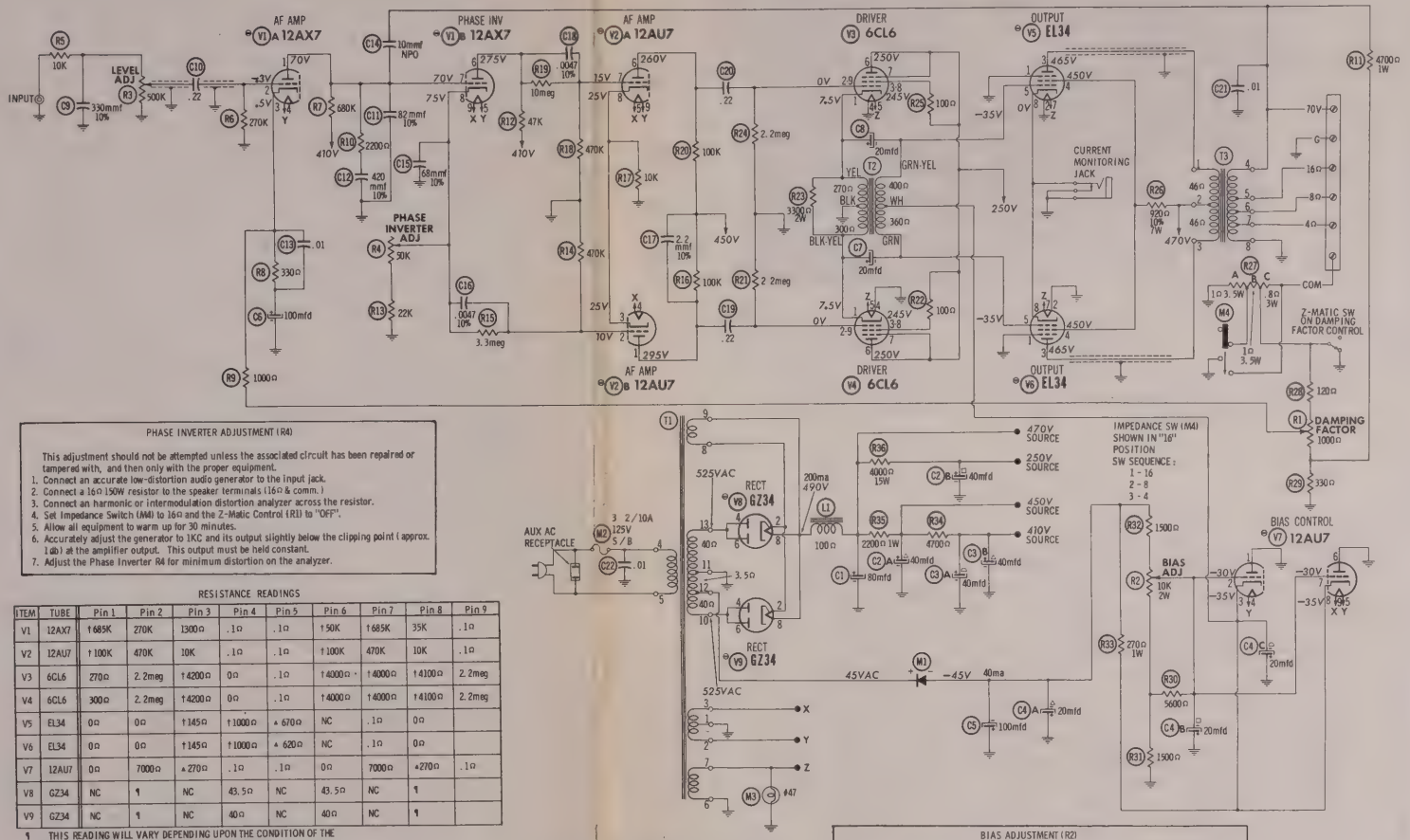
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



PHASE INVERTER ADJUSTMENT (R4)

This adjustment should not be attempted unless the associated circuit has been repaired or tampered with, and then only with the proper equipment.

1. Connect an accurate low-distortion audio generator to the input jack.
2. Connect a 16Ω 150W resistor to the speaker terminals (16Ω & comm.)
3. Connect an harmonic or intermodulation distortion analyzer across the resistor.
4. Set Impedance Switch (M4) to 16Ω and the Z-Matic Control (R1) to "OFF".
5. Allow all equipment to warm up for 30 minutes.
6. Accurately adjust the generator to 1KC and its output slightly below the clipping point (approx. 1db) at the amplifier output. This output must be held constant.
7. Adjust the Phase Inverter R4 for minimum distortion on the analyzer.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†685K	270K	1300Ω	.1Ω	.1Ω	†50K	†685K	35K	.1Ω
V2	12AU7	†100K	470K	10K	.1Ω	.1Ω	†100K	470K	10K	.1Ω
V3	6CL6	270Ω	2.2meg	†4200Ω	0Ω	.1Ω	†4000Ω	†4000Ω	†4100Ω	2.2meg
V4	6CL6	300Ω	2.2meg	†4200Ω	0Ω	.1Ω	†4000Ω	†4000Ω	†4100Ω	2.2meg
V5	EL34	0Ω	0Ω	†145Ω	†1000Ω	▲670Ω	NC	.1Ω	0Ω	
V6	EL34	0Ω	0Ω	†145Ω	†1000Ω	▲620Ω	NC	.1Ω	0Ω	
V7	12AU7	0Ω	7000Ω	▲270Ω	.1Ω	.1Ω	0Ω	7000Ω	▲270Ω	.1Ω
V8	GZ34	NC	¶	NC	43.5Ω	NC	43.5Ω	NC	¶	
V9	GZ34	NC	¶	NC	40Ω	NC	40Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 8 OF V9.
▲ MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

BIAS ADJUSTMENT (R2)

If either output tube (V5, V6) is replaced, R2 should be adjusted.

1. Turn Level (R2) Control fully counterclockwise
2. Connect the speaker or proper load to the unit.
3. Connect a 0-150ma. DC meter in the plate current jack. (If desired, the close circuit type jack may be opened and the meter connected across the jack terminals).
4. Allow the unit to warm up for 30 minutes.
5. Adjust R2 for a meter reading of 125ma.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

FISHER MODEL 200

PHOTOFACT* Folder

FONOVOX
MODEL 9070

FONOVOX
MODEL 9070

FONOVOX
MODEL 9070

TRADE NAME	Fonovox Model 9070		
SUPPLIER	Videola-Erie Corp., 75 Front Street, Brooklyn 1, N. Y.		
TYPE SET	AC Operated FM-BC-SW Receiver With 4 Speed Automatic Record Changer		
TUBES	Eight		
POWER SUPPLY	110/125/150/220/240 Volts AC-60 Cycles	RATING	100 Watts, . 98 Amp. @ 117 Volts AC
	TUNING RANGES		
	BROADCAST 535-1620KC FREQ. MOD. 88-108MC	SHORT WAVE LONG WAVE	6-12MC 150-350KC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE PERPETUUM - EBNER REXAA - PHOTOFACT SET 378 FOLDER 10

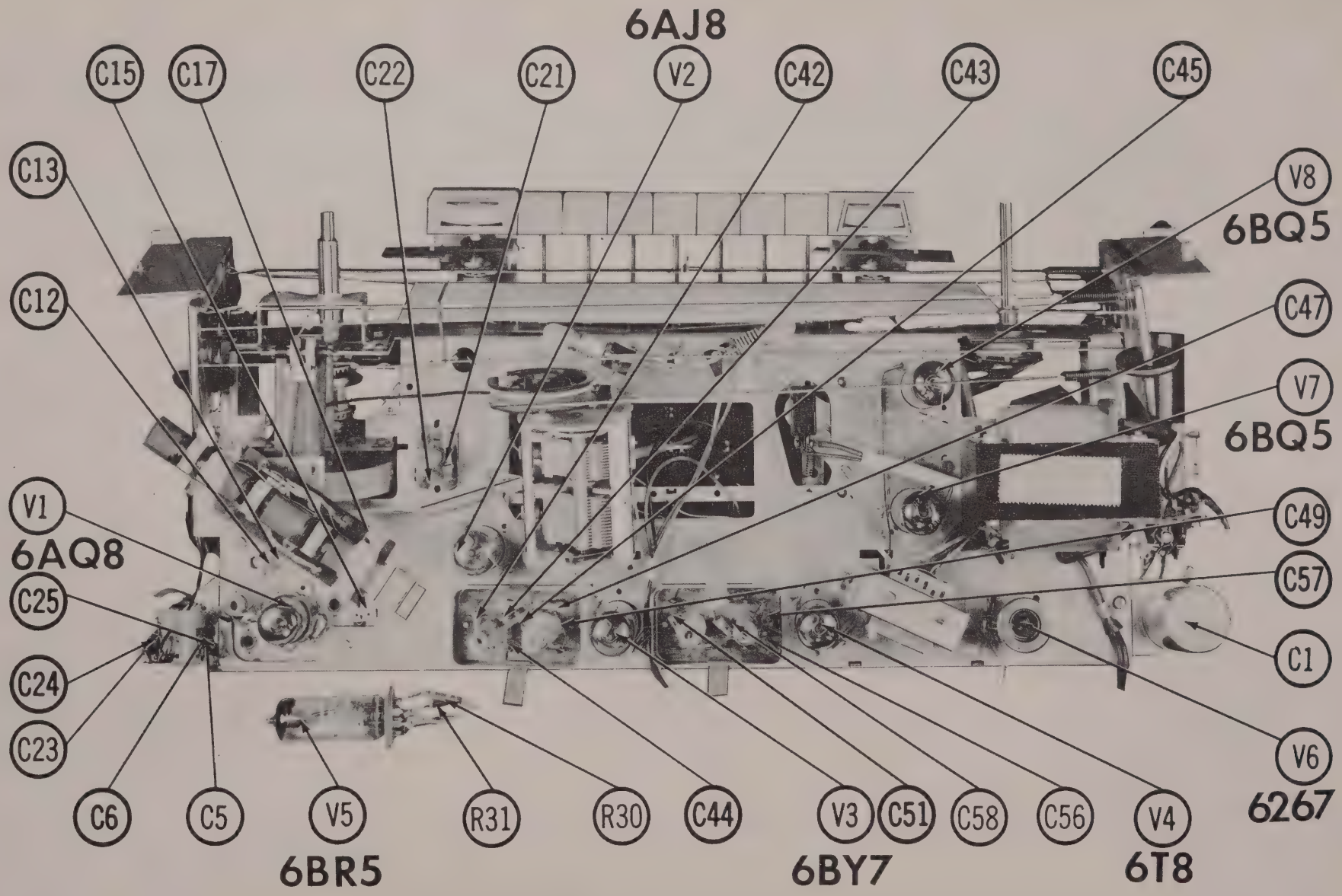
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

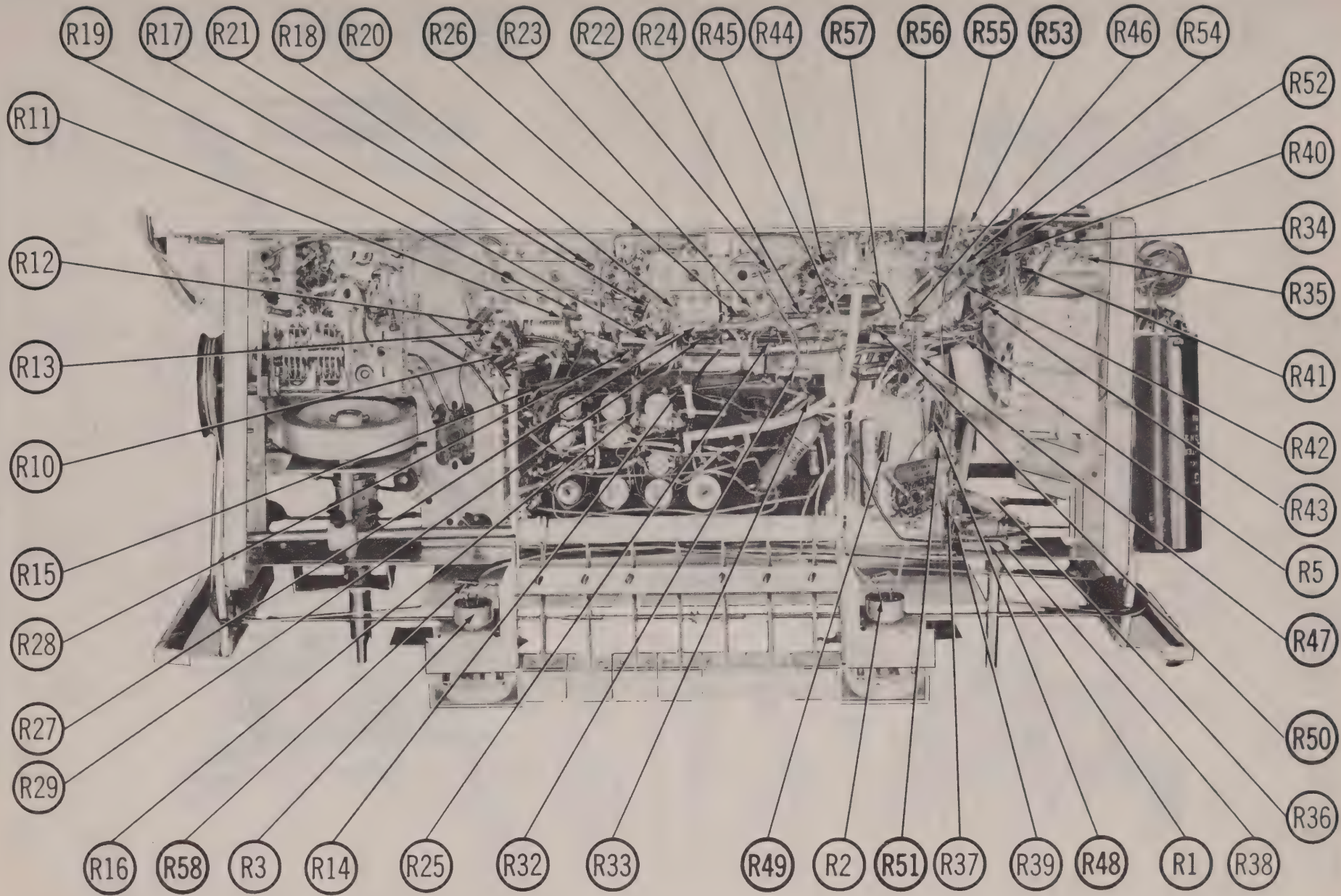
H808

DATE 2-59 SET 430 FOLDER 6

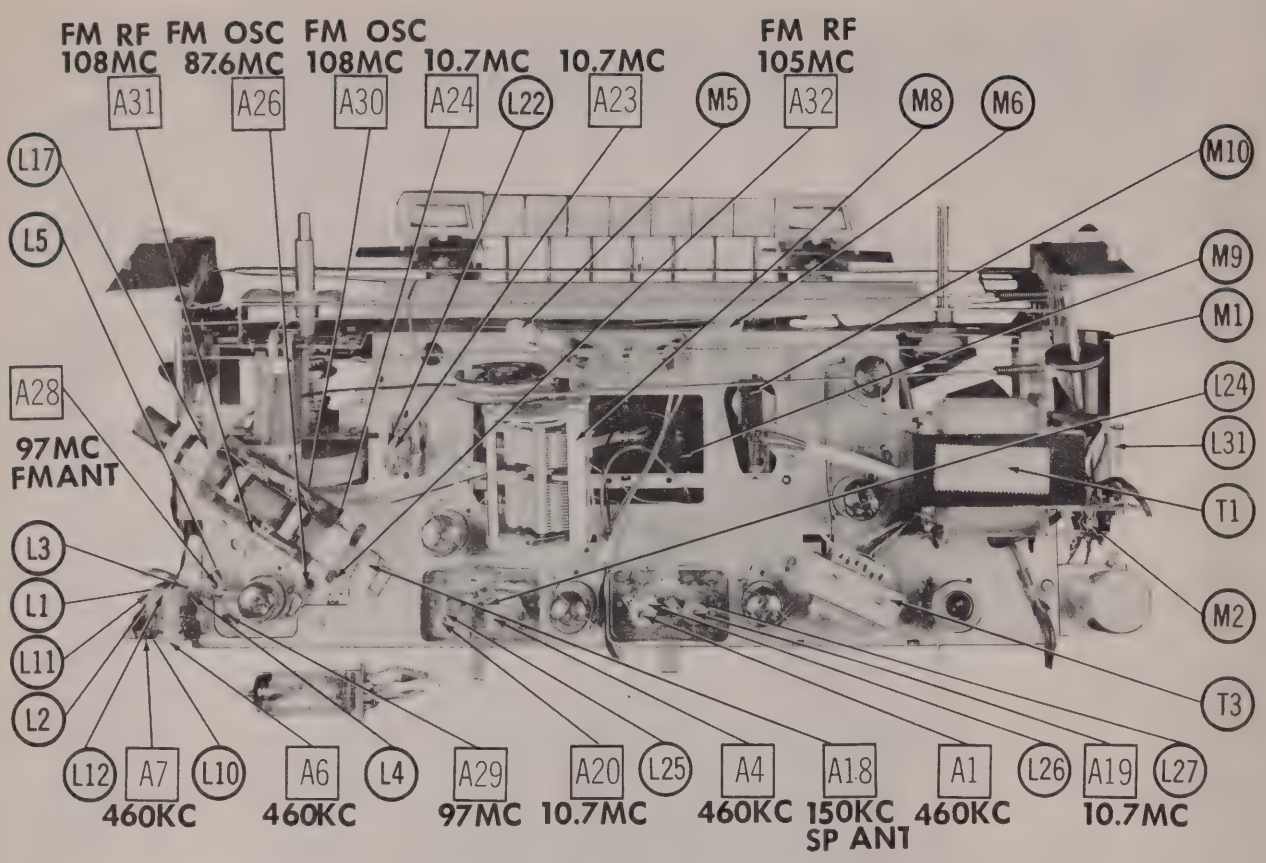
SET 430 FOLDER 6



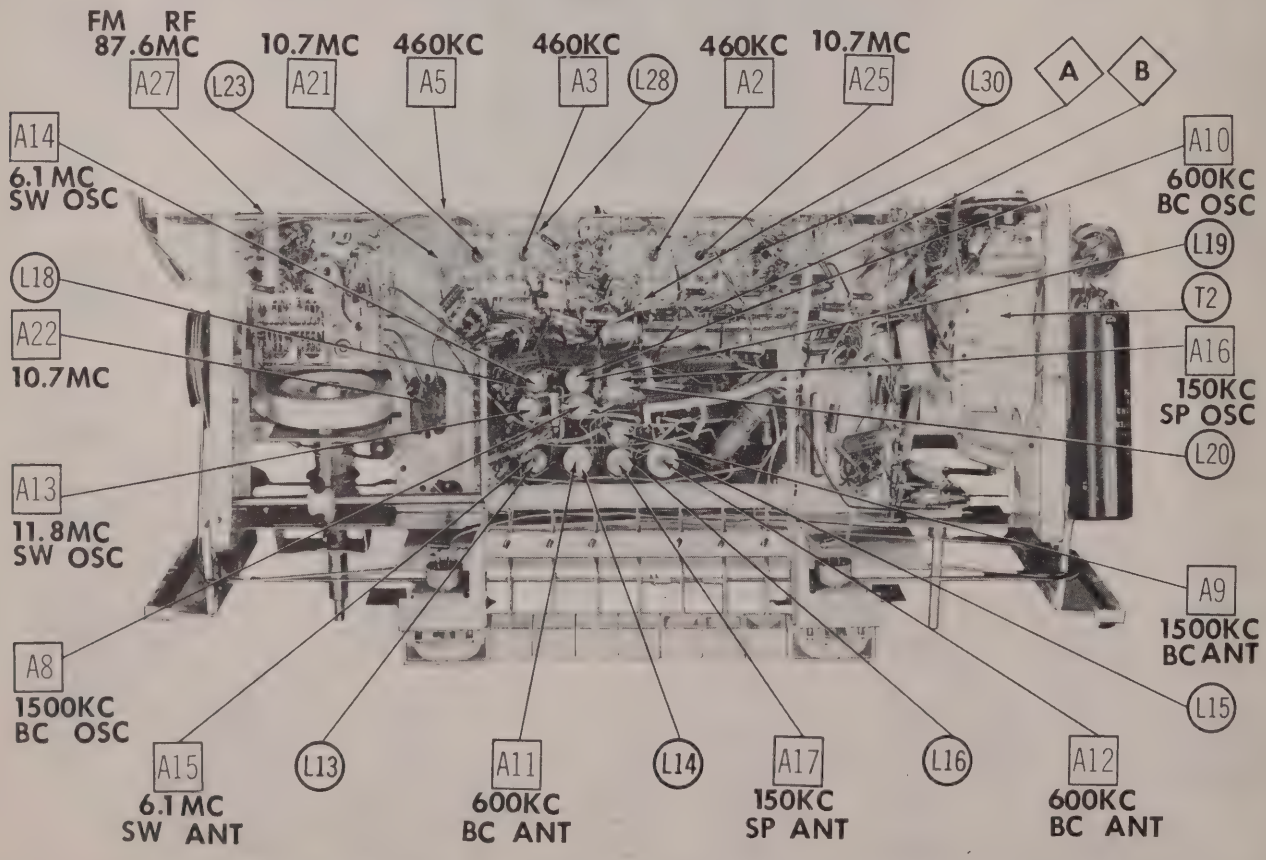
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS TOP VIEW - ALIGN, INDUCTOR & MISC IDENT.



CHASSIS BOTTOM VIEW - ALIGN & INDUCTOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 2 (grid) of ECH81 (V2). Low side to chassis.	460KC (400% Mod.)	BC	Tuning gang fully open	Across voice coil	A1, A2, A3, A4, A5	Adjust for maximum deflection.
2.	"	High side to AM antenna terminal. Low side to chassis.	"	"	"	"	A6	Adjust for MINIMUM deflection.
3.	"	High side to AM antenna terminal A2. Low side to chassis.	"	"	"	"	A7	"
4.	"	High side to AM antenna terminal A1. Low side to chassis.	1500KC	"	1500KC	"	A8, A9	Adjust for maximum deflection.
5.	"	"	600KC	"	600KC	"	A10, A11, A12	Adjust for maximum deflection. Repeat steps 4 and 5.
6.	"	"	11.8MC	SW	11.8MC	"	A13	Adjust for maximum deflection. Adjust A13 460KC lower than 11.8MC.
7.	"	"	6.1MC	"	6.1MC	"	A14, A15	Adjust for maximum deflection. Repeat steps 6 and 7.
8.	"	"	150KC	SP	150KC	"	A16, A17, A18	Adjust for maximum deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	200mmf	High side to pin 7 (grid) of ECH85 (V1). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe thru 1meg to point (A). Common to chassis.	A19, A20 A21, A22 A23, A24	Adjust for maximum deflection.
10.	"	"	"	"	"	DC probe to point (B). Common to point (C).	A25	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
9.	200mmf	High side to pin 7 (grid) of ECC85 (V1). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. thru 1meg to point (A). Low side to chassis.	A19, A20 A21, A22 A23, A24	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
10.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A25	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A19 for maximum amplitude and straighness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	270Ω Carbon Resistors	Across FM antenna terminals	87.6MC (Unmod.)	FM	Tuning gang fully closed	DC probe thru 1meg to point (A). Common to chassis.	A26, A27	Adjust for maximum deflection.
12.	"	"	97MC	"	Tune to 97MC signal	"	A28	"
13.	"	"	"	"	"	"	A29	Adjust for MINIMUM deflection.
14.	"	"	108MC	"	108MC	"	A30, A31	Adjust for maximum deflection.
	Step 15 (to reduce oscillator radiation) is not necessary unless V1 has been replaced or the associated circuit has been tampered with or repaired.							
15.	"	"	105MC	"	Tune to 105MC signal	"	A32	Adjust for MINIMUM deflection.

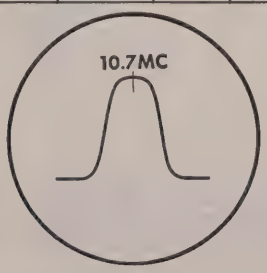


FIG. 1

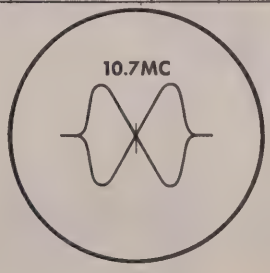
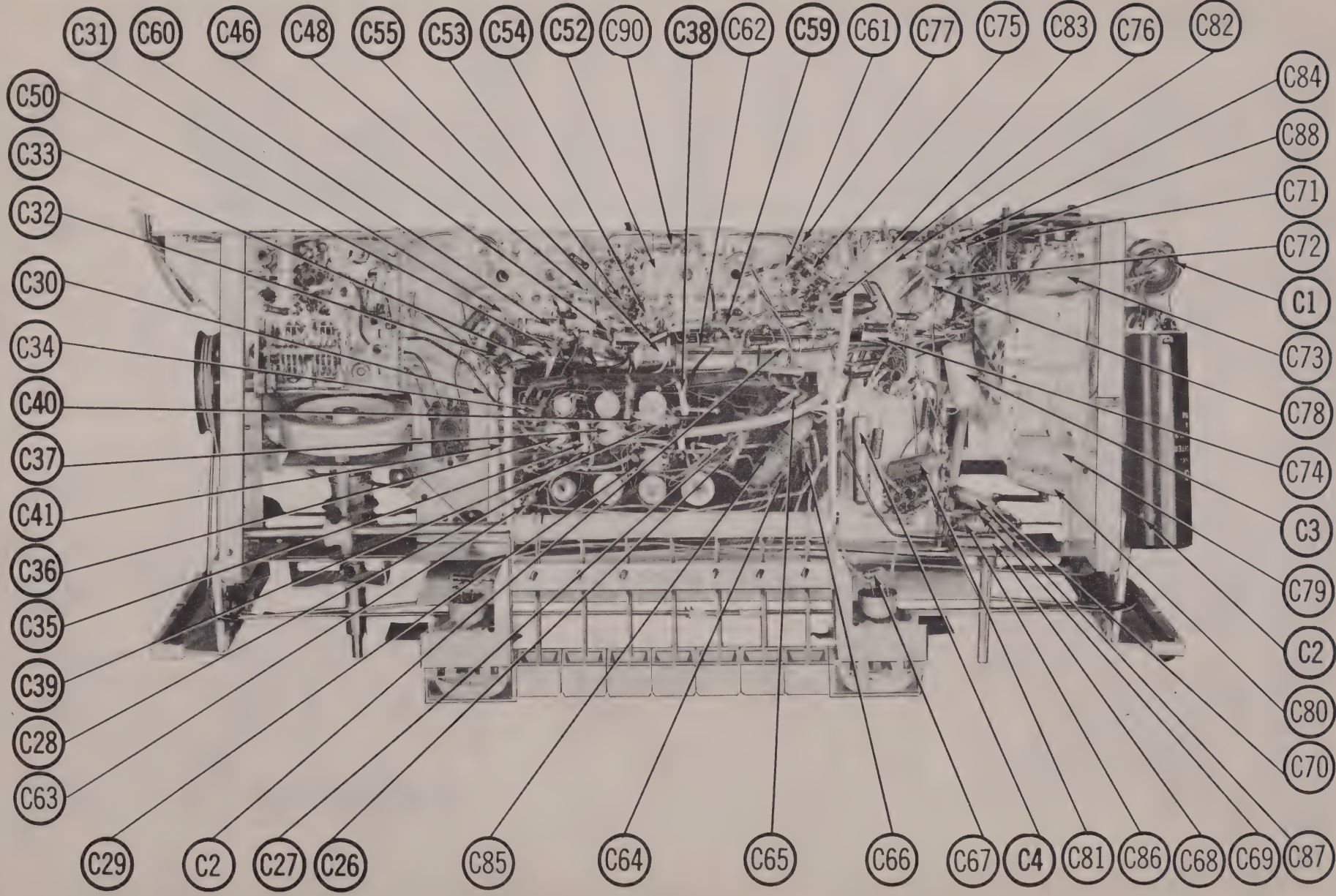
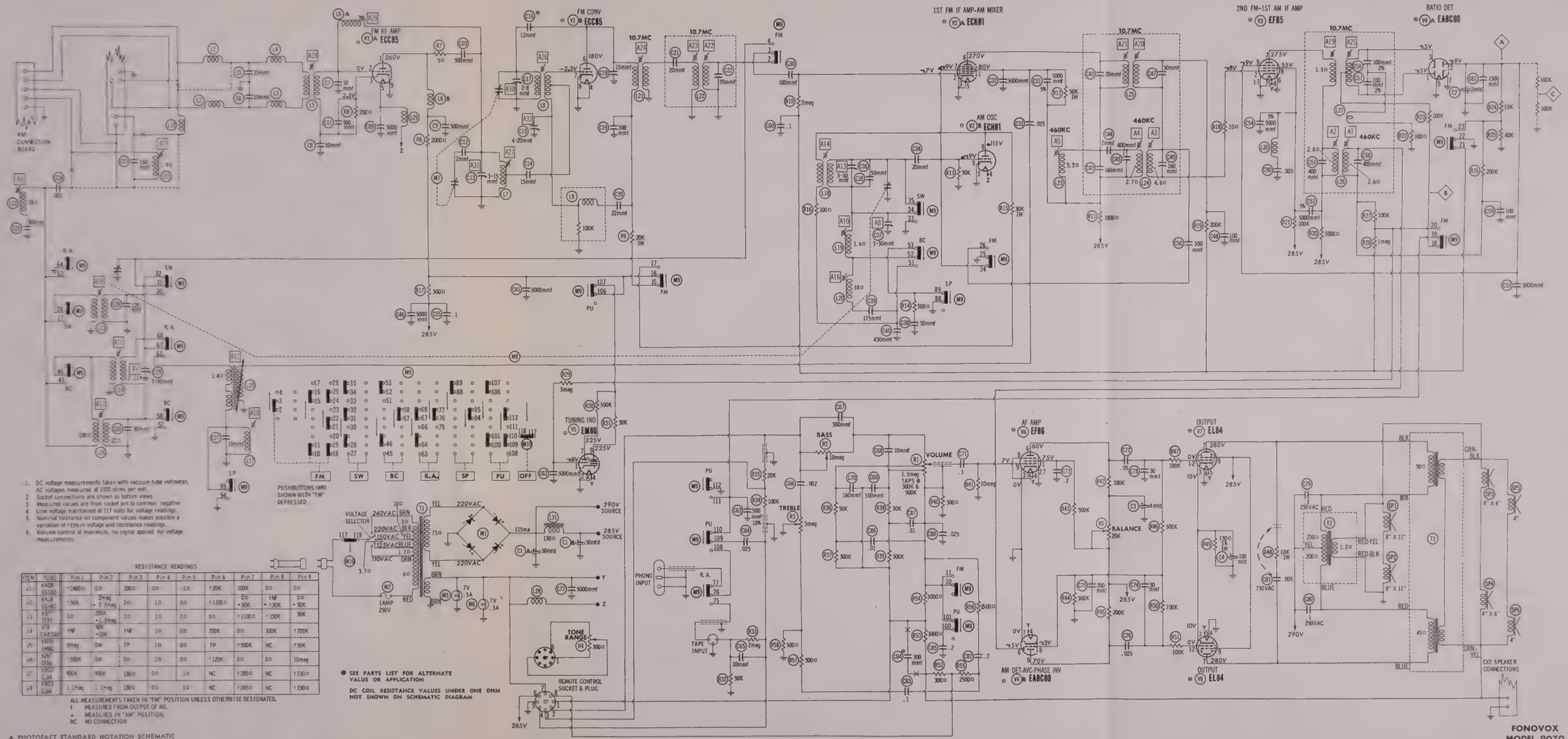


FIG. 2



CHASSIS TOP VIEW



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

TUBE	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AQ8 ECC85	†2400Ω	0Ω	200Ω	0Ω	1Ω	†20K	100K	0Ω	0Ω
V2	6AJ8 ECH81	†50K	1meg ± 3.3meg	0Ω	1Ω	0Ω	†1100Ω	0Ω ± 50K	INF ± 130K	0Ω ± 50K
V3	6BY7 EF85	0Ω	200K ± 1.3meg	0Ω	1Ω	0Ω	0Ω	†1100Ω	†100K	50K
V4	6T8 EABC80	INF	50K ±10K	INF	1Ω	0Ω	200K	0Ω	300K	†200K
V5	6BR5 EM80	3meg	0Ω	TP	1Ω	0Ω	TP	†500K	NC	†50K
V6	6CB6 EF86	†500K	0Ω	0Ω	1Ω	0Ω	†120K	0Ω	0Ω	10meg
V7	6BQ5 EL84	900K	900K	130Ω	0Ω	1Ω	NC	†280Ω	NC	†130Ω
V8	6BQ5 EL84	1.1meg	1.1meg	130Ω	0Ω	1Ω	NC	†245Ω	NC	†130Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
= MEASURED IN "AM" POSITION.
NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1959

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Conv.	6AQ8/ECC85 ①
V2	1st FM IF Amp. - AM Mixer - AM Osc.	6AJ8/ECH81 ①
V3	2nd FM - 1st AM IF Amp.	6BY7/EF85 ①
V4	Ratio Det. - AM Det. - AVC - Phase Inv.	6T8/EABC80 ①②
V5	Tuning Indicator	6BR5/EM80 ①
V6	AF Amplifier	6267/EF86 ①③
V7	Output	6BQ5/EL84 ①
V8	Output	6BQ5/EL84 ①

① Domestic type listed may not be directly interchangeable in some instances.
② Some versions may use 6AK8 in this application.
③ Some versions may use Z729 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FONOVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	385			BR5045				R2462 *
B	50	385			BR5045				
C2	2	80		PRS450V2	BR245	TT150X2	TD-2-450	MT-4502	R2547 *
C3	4	385		PRS450V4	BR445	TC70	TD-4-450	MT-4504	TVA-1702
C4	100	15		PRS15V100	BBR100-15	TC2501	TD-100-15	MTH-1510	TVA-1160

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FONOVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C6	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C7	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C8	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C9	500			SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C10	500			SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C11	500			SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C12	2					C10V2C			
C13	3-15								
C14	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C15	4-20								
C16	12			SI 12	D6-120	LT6Q12	UC-5412	5GA-Q12	①
C17	2-8								
C18	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C19	300			1468-0003	DD-301	5W5T3	MC-241	1FM-33	
C20	22			SI 22	D6-220	LT6Q22	UC-5422	5GA-Q22	
C21	20			SI 20	D6-200	CTA6Q2C	ZT-542	5GA-Q2	
C22	20			SI 20	D6-200	CTA6Q2C	ZT-542	5GA-Q2	
C23	160			1468-00016		5W5T16		1FM-316	
C24	.001	500		P688N-001	D6-102	CUB6D1	GEM-625	6TM-D1	
C25	50			SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C26	30			SI 30				5GA-Q3	
C27	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C28	120			1468-00012	DD-121	5W5T12		1FM-312	

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FONOVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C29	3-30								
C30	100			1468-0001	DD-101	5W5T1	MC235	1FM-31	
C31	5000			1464-005		1DR5D5	MC465	MS-25	5%
C32	5000			SI 5000	D6-502	LT6D5	UC-525	5HK-D5	
C33	.025	500		P688N-025			GEM-6125		
C34	20			SI 20	D6-200	CTA6Q2C	ZT-542	5GA-Q2	
C35	50			SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C36	3-30								
C37	3-30								
C38	50			SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C39	175								
C40	430			1468-00043		5W5T43		1FM-343	
C41	5000			SI 5000	D6-502	LT6D5	UC-525	5HK-D5	
C42	20			SI 20	D6-200			5GA-Q2	
C43	160			1468-00016		5W5T16		1FM-316	
C44	2					C10V2C			
C45	400			1468-0004	DD-401	5W5T4	MC243	1FM-34	
C46	5000			SI 5000	D6-502	LT6D5	UC-525	5HK-D5	
C47	50			SI 50	D6-500	LT6Q5	UC-545	5GA-Q5	
C48	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C49	160			1468-00016		5W5T16		1FM-316	
C50	300			1468-0003	DD-301	5W5T3	MC241	1FM-33	
C51	400			1468-0004	DD-401	5W5T4	MC243	1FM-34	
C52	5000			1464-005		1DR5D5	MCE465	MS-25	5%
C53	5000			SI 5000	D6-502	LT6D5	UC-525	5HK-D5	
C54	5000			1464-005		1DR5D5	MCE465	MS-25	5%
C55	.1	500		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C56	100								2%
C57	100								2%
C58	400			1468-0004	DD-401	5W5T4	MC243	1FM-34	
C59	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C60	.1	125		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C61	1500			SI 1500	D6-152	LT6D15	UC-5215	5HK-D15	
C62	5000			SI 5000	D6-502	LT6D5	UC-525	5HK-D5	
C63	500			1469-0005	MD-501	5R5T5	MCB245	MS-35	10%
C64	.025	125		P288N-025			GEM-4125	4TM-025	
C65	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C66	.002	500		P688N-002	D6-202	CUB6D2	GEM-622	6TM-D2	
C67	300			1468-0003	DD-301	5W5T3	MC241	1FM-33	
C68	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C69	300			1468-0003	DD-301	5W5T3	MC241	1FM-33	
C70	160			1468-00016		5W5T16		1FM-316	
C71	.1	125		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C72	.05	500		P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C73	.2	500		P688N-2		CUB6P2	GEM-602	6TM-P2	
C74	50			SI 50	D6-500	LT6Q5		5GA-Q5	
C75	200			SI 200	D6-201	LT6T2	UC-532	5GA-T2	
C76	.025	500		P688N-025			GEM-6125		
C77	5000			SI 5000	D6-502	LT6D5	UC-525	5HK-D5	
C78	30			SI 30	DD-300			5GA-Q3	
C79	.1	250VAC							
C80	.1	250VAC							
C81	.005	750VAC							
C82	.2	125		P288N-2		CUB6P2	GEM-402	4TM-P2	
C83	.1	125		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C84	300			1468-0003	D6-301	5W5T3	MC241	1FM-33	②
C85	.2	125		P288N-2		CUB6P2	GEM-402	4TM-P2	
C86	.01	125		P288N-01	D6-103	CUB2S1	GEM-211	2TM-S1	
C87	.01	125		P288N-01	D6-103	CUB2S1	GEM-211	2TM-S1	
C88	.025	125		P288N-025			GEM-4125	4TM-S25	
C89	5000			SI 5000	D6-502	LT6D5	UC-525	5HK-D5	
C90	.005	500		P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	

① Some versions may use 15mmf in this application. ② Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FONOVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1.3meg	½						Volume, Taps ② 300K & 500K
R2	10meg	½						Bass
R3	3meg	½						Treble
R4	300Ω	½						Tone Range
R5	20K							Balance

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		FONOVOX PART No.	NOTES
	OHMS	WATT		
R6	2000Ω			
R7	5Ω			
R8	200Ω			
R9	20K	1		
R10	2meg			
R11	1000Ω			
R12	50K	1		
R13	50K			
R14	500Ω			
R15	30K	1		
R16	100Ω			
R17	300Ω			
R18	10Ω			
R19	200K			
R20	1000Ω			
R21	100K			
R22	100Ω			
R23	100K			
R24	10K			
R25	40K			
R26	200K			
R27	100K			
R28	1meg			
R29	3meg			
R30	500K			
R31	50K			
R32	50K			

ITEM No.	RATING		FONOVOX PART No.	NOTES
	OHMS	WATT		
R33	2meg			
R34	100K			
R35	20K			
R36	50K			
R37	500K			
R38	30K			
R39	500K			
R40	500Ω			
R41	10meg			
R42	100K			
R43	500K			
R44	300K			
R45	200K			
R46	500K			
R47	100K			
R48	10K	1		
R49	130Ω 5%	1		
R50	700K			
R51	100K			
R52	300Ω			
R53	3000Ω			
R54	3000Ω			
R55	2500Ω			
R56	2500Ω			
R57	500Ω			
R58	500Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		FONOVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil						
L2	FM Ant. Coil						
L3	RF Choke						
L4	RF Choke						
L5	FM Ant. Trans.						
L6A	IF Trap						
B	RF Choke						6.2 Microhenries
L7	FM RF Coil						
L8	FM Osc. Coil						
L9	RF Choke						Wound on 100K
L10	RF Choke		19-1002	SW-630	4606		2.5 Microhenries
L11	SW IF Trap						
L12	BC IF Trap						
L13	SW Ant. Trans.						
L14	BC Ant. Trans.						
L15	BC Ant. Trans.						
L16	Sp. Ant. Trans.						

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		FONOVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L17A	BC Loopstick						
B	Sp. Loopstick						
L18	SW Osc. Coil						
L19	BC Osc. Coil						
L20	Sp. Osc. Coil						
L21	1st FM IF						
L22	2nd FM IF						
L23	1st AM IF						
L24	2nd AM IF						
L25	3rd FM IF						
L26	3rd AM IF						
L27	Ratio Detector						
L28	Fil. Choke		19-1002	SW-630	4606		2.5 Microhenries
L29	Fil. Choke		19-1001	BC-562	4604		1.5 Microhenries
L30	RF Choke		19-1002	SW-630	4606		2.5 Microhenries

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	FONOVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L31	.050A	130Ω	3.5 Hy.	ND12						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	FONOVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	240V Taps ② 220V, 150V 125V, 117V ② .98A	220V ② .115A	6.3V ② 4.1A	NTBV208A						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FONOVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7000Ω CT	14Ω	ATBV203A	Z1011		AU-606	A-3870			
	PRI. 1	SEC.								
T3	1100Ω	20Ω	ATBV230							
	PRI. 2									
	1100Ω									

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	FONOVOX PART No.	QUAM PART No.	
SP1	8" x 11"	PM	6-8Ω	9000G		① Parallel and Phase
SP2	8" x 11"	PM	6-8Ω	9000G		
SP3	4" x 6"	PM	5-6Ω	8000G		
SP4	4" x 6"	PM	5-6Ω	8000G		
SP5	4"	PM	22Ω	7000G ①		
SP6	4"	PM	22Ω	7000G ①		

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA FONOVOX PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.115A	B250C150N2			D-64 ①	① Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA FONOVOX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2		1A 250V						

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA FONOVOX PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M3		310-TB	N8-1 & N8-3			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA FONOVOX PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M4		† RX-550 or †♦ RX-550SD or ♦ RX-550D	† W-98TPS or †♦ W-98DS or ♦ W-98TPD	† Jewel ♦ Diamond

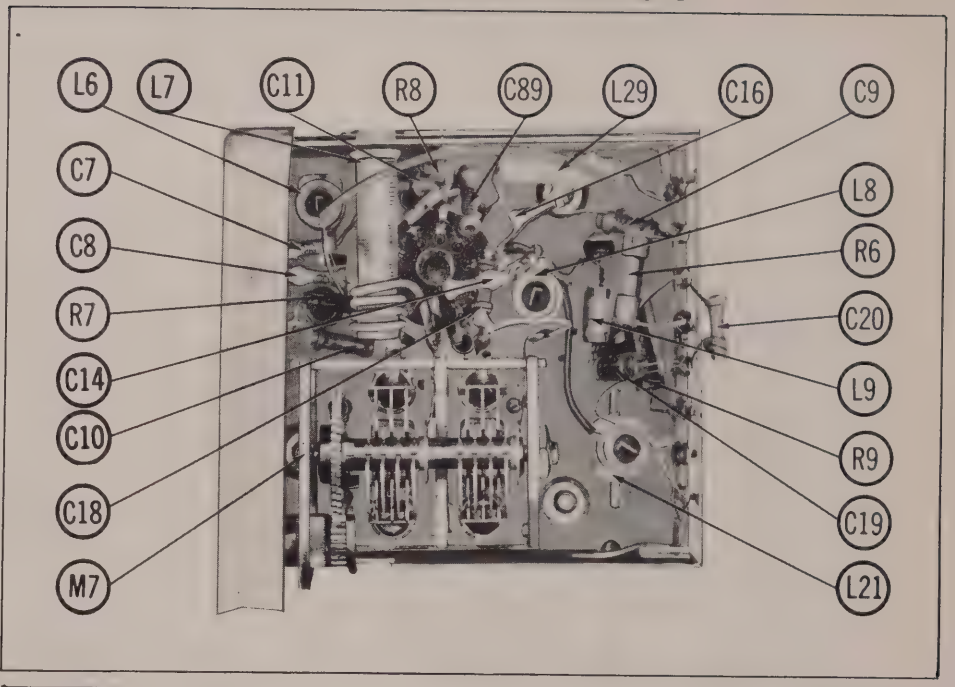
MISCELLANEOUS

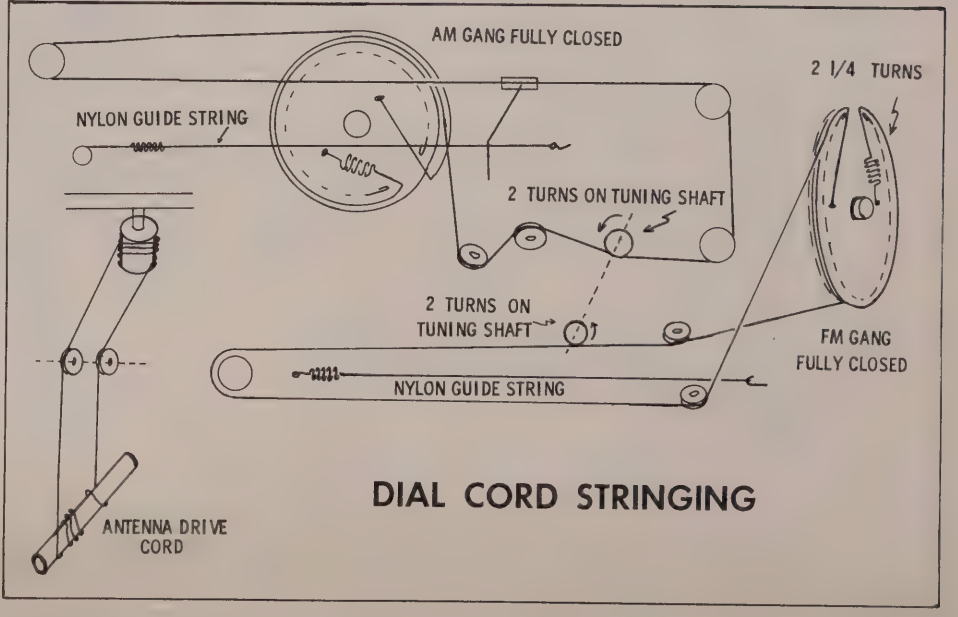
ITEM No.	PART NAME	FONOVOX PART No.	NOTES
M5	Lamp		7V, .3 Amps.
M6	Lamp		7V, .3 Amps.
M7	Tuning Cap.		2 Gang, FM
M8	Tuning Cap.		2 Gang, AM (Ant. 6-436mmf, Osc 13-428mmf)
M9	Switch		Function, Slide Type
M10	Switch		Power On-Off, Snap Type

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

FM RF SUB CHASSIS





DIAL CORD STRINGING

PHOTOFACT* Folder

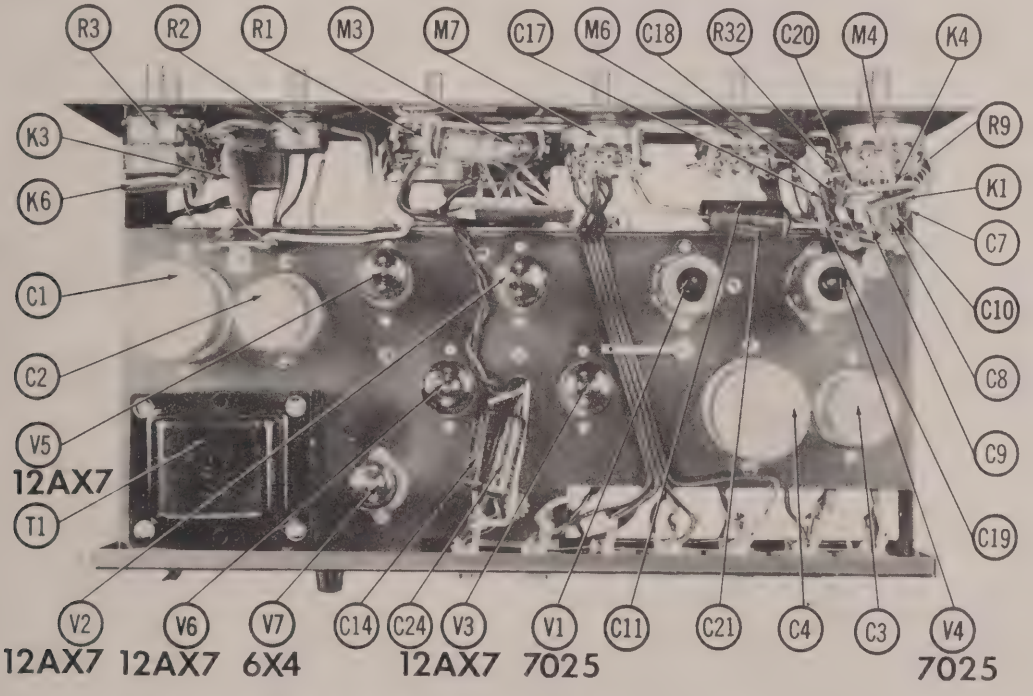
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

GROMMES MODEL 208

GROMMES MODEL 208

TRADE NAME	Grommes Model 208
MANUFACTURER	Precision Electronics, Inc., 9101 King Ave., Franklin Park, Illinois
TYPE SET	AC Operated Stereo Preamplifier
TUBES	Seven
POWER SUPPLY	110 - 120 Volts AC, 50-60 Cycles RATING 31 Watts, .27 Amp. @ 117 Volts AC.

GROMMES MODEL 208



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H803

SET 430 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	CH. A Pre Amp.	7025	
V2	CH. A AF Amp.	12AX7	
V3	CH. A AF Amp. -Cath. Follower	12AX7	
V4	CH. B Pre Amp.	7025	
V5	CH. B AF Amp.	12AX7	
V6	CH. B AF Amp. -Cath. Follower	12AX7	
V7	Rectifier	6X4	

Note 1. Some versions may use 12AX7/ ECC83 in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GROMMES PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K		DL500K2T					Volume, Tap ⓐ 100K & 200K
B	500K							Volume, Tap ⓐ 100K & 200K
R2A	1meg		MTC-1M	AB-69 †	A47-1meg-S	Q11-137	U54	Level Adjust
B	Shaft			AK-9	RS-3	RQ	Not Req.	
R3A	1meg		DTC-1M	BB-108 †	AD47-1meg-S	Q11-137		Treble
B	1meg			Not Req.	RS-2	M11-137		Treble
R4A	1meg		DTC-1M	BB-108 †	AD47-1meg-S	Q11-137		Bass
B	1meg			Not Req.	RS-2	M11-137		Bass

† Use an extra mounting nut behind mounting surface.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	GROMMES PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	400		AFH4-117-48	D0476			Q-250	R2246 *
B	■30	350			BR4045			MT-4510	
C	▲10	300							
D	20	25							
C2A	■10	350		AFH2-47	B0370	FP231	TMD-47	D-200	TVL-2750
B	▲10	350							
C3A	■10	250		AFH3-189-40	A0430	WP055		S-203	R2735 *
B	▲100	15			BBR100-15	TC52		MTH-1510	
C4A	▲500	25			BR5002			D-023	TVL-2233
B	▲500	25			BR5002				

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	GROMMES PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C6	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C7	1000						JL-210		10%
C8	1000						JL-210		10%
C9	3000								10%
C10	2000						JL-220		10%
C11	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	①
C12	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C13	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C14	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	①
C15	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C16	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C17	1000						JL-210		10%
C18	1000						JL-210		10%
C19	3000								10%
C20	2000						JK-220		10%
C21	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	①
C22	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C23	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C24	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	①

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		GROMMES PART No.	NOTES
	OHMS	WATT		
R5	47K			
R6	10K			
R7	100K 5%			Note 1
R8	1000Ω 5%			Note 1
R9	47K			
R10	1meg			
R11	100K 5%			Note 1
R12	470Ω			
R13	1meg			
R14	3.3meg			
R15	47K			
R16	100K			
R17	470K			
R18	100K			
R19	470Ω			
R20	100K			
R21	220K			
R22	100K			
R23	22K			Note 2
R24	470K			
R25	120K			Note 2
R26	1000Ω			
R27	120K			
R28	47K			
R29	10K			
R30	100K 5%			Note 1
R31	1000Ω 5%			Note 1
R32	47K			
R33	1meg			
R34	100K 5%			Note 1
R35	1meg			
R36	3.3meg			
R37	47K			
R38	100K			
R39	470K			
R40	100K			
R41	470Ω			
R42	100K			
R43	220K			
R44	100K			
R45	22K			Note 2
R46	470K			
R47	120K			Note 2
R48	1000Ω			
R49	120K			
R50	22K			
R51	4700Ω			
R52	4700Ω			
R53	2700Ω	1		
R54	2700Ω	1		
R55	470K			
R56	22K			
R57	10Ω	10		
R58	3.3meg			Note 3.

Note 1. Low noise type.
Note 2. Some versions may use 100K in this application.
Note 3. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	GROMMES PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .265A	620VCT ⓐ .015A	6.3VCT ⓐ 1.1A	TP-213						
	SEC. 3	SEC. 4	SEC. 5							
	20V ⓐ .28A									

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	GROMMES PART No.	REPLACEMENT DATA
K1	Tone Compensation	330mmf, 800mmf, 1500mmf, 100K		
K2	Tone Compensation	51mmf, 10000mmf, 10000mmf, 22K, 47K, 470K		
K3	Tone Compensation	300mmf, 470mmf, 3000mmf, 10K, 68K, 68K, 68K		
K4	Tone Compensation	330mmf, 800mmf, 1500mmf,100K		
K5	Tone Compensation	51mmf, 10000mmf, 10000mmf, 22K, 47K, 470K		
K6	Tone Compensation	3000mmf, 470mmf, 3000mmf, 10K, 68K, 68K, 68K		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	GROMMES PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.280A	179802	1016	B1B	304B	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			GROMMES PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	½A 250V			312.500 (3AG ½A 250V)	342001	AGC½	HKP

MISCELLANEOUS

ITEM No.	PART NAME	GROMMES PART No.	NOTES
M3	Lamp		#51
M4	Switch		Roll-Off Selector (4 Position, Rotary, Wafer Type)
M5	Switch		Turnover Selector (4 Position, Rotary, Wafer Type)
M6	Switch		Function Selector (4 Position, Rotary, Wafer Type)
M7	Switch		Input Selector (4 Position, Rotary, Wafer Type)
M8	Switch		Input, Tape Head-Mag. Phono (DPDT, Slide Type)
M9	Switch		Loudness On-Off (DPDT, Slide Type)
M10	Switch		Power On-Off (SPST, Slide Type)

CABINETS & CABINET PARTS

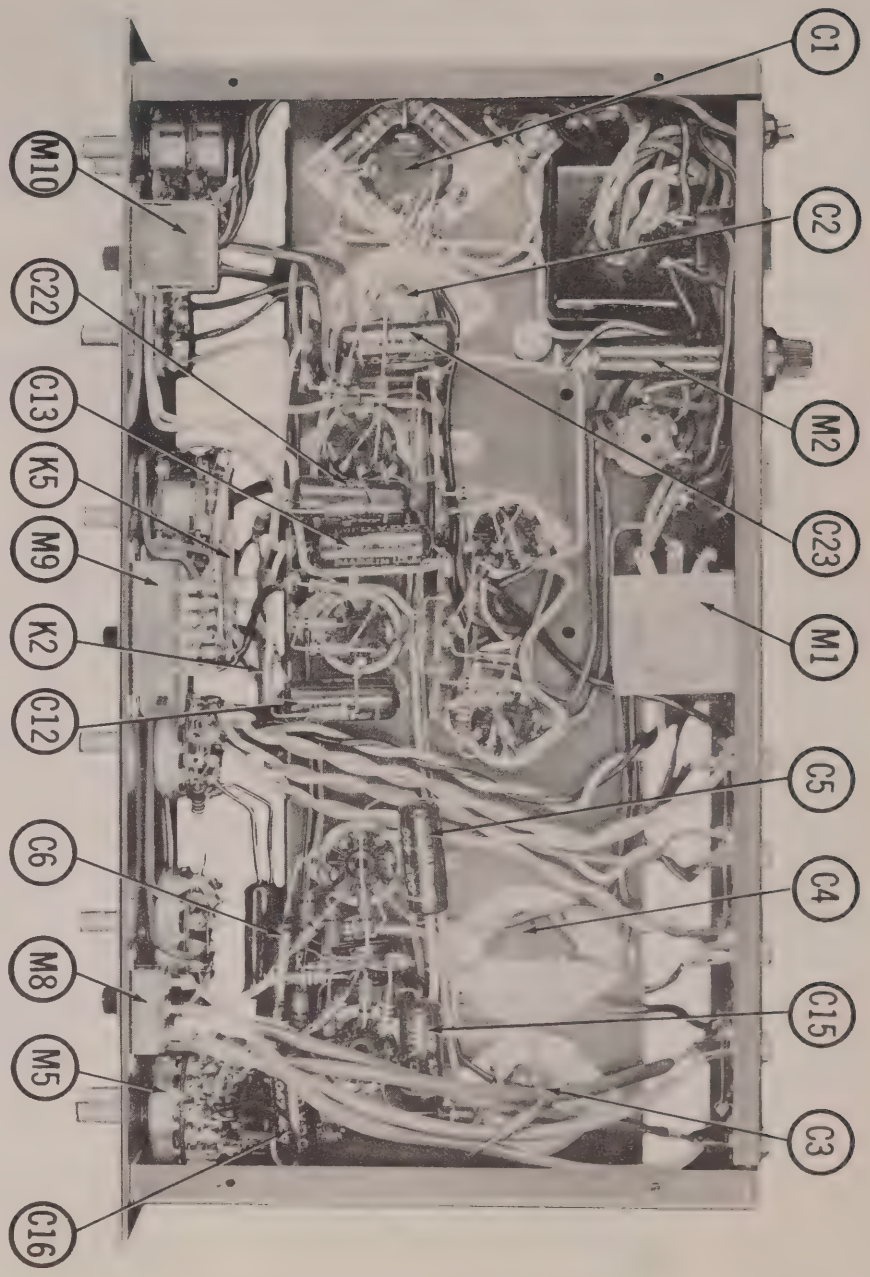
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

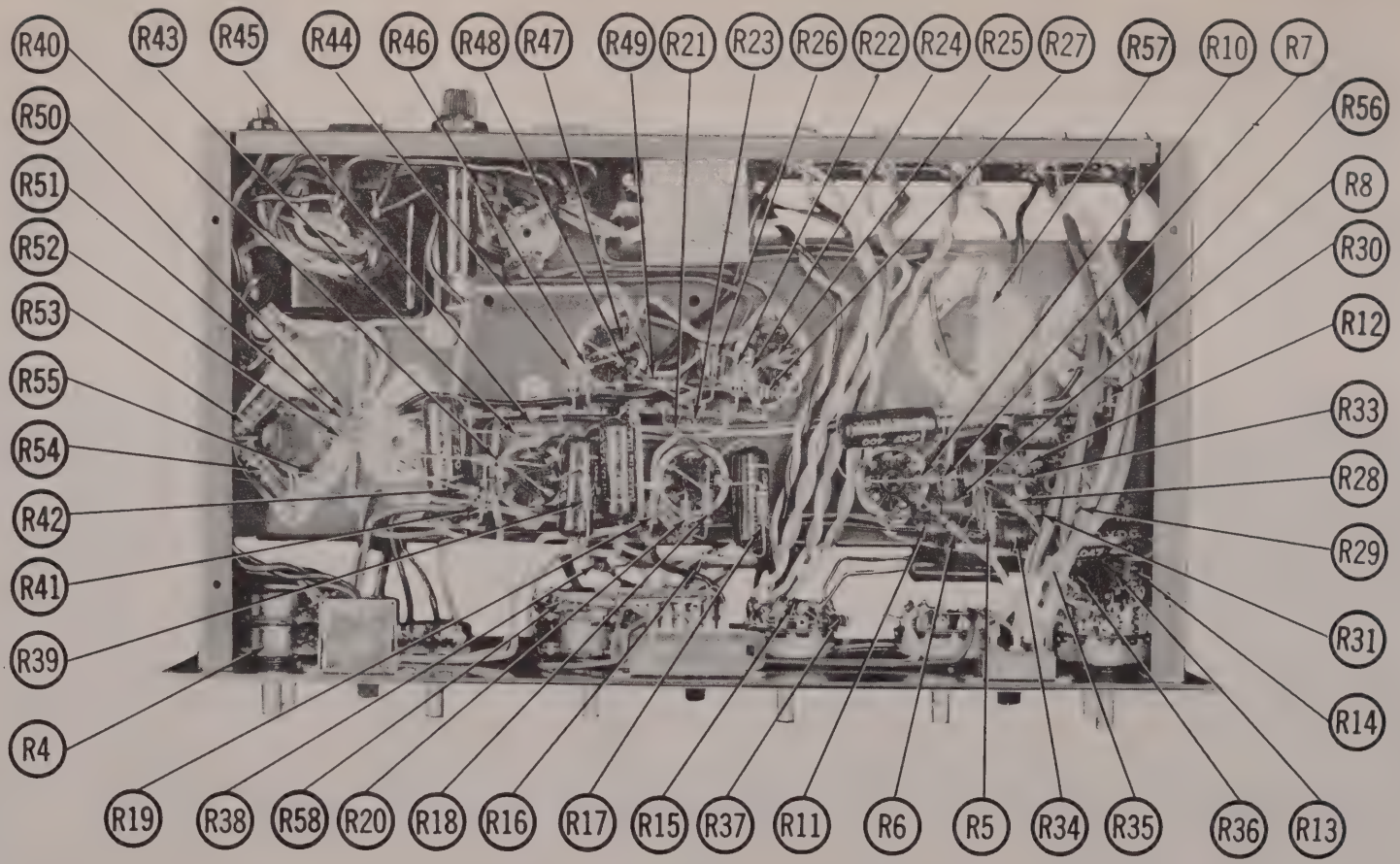
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

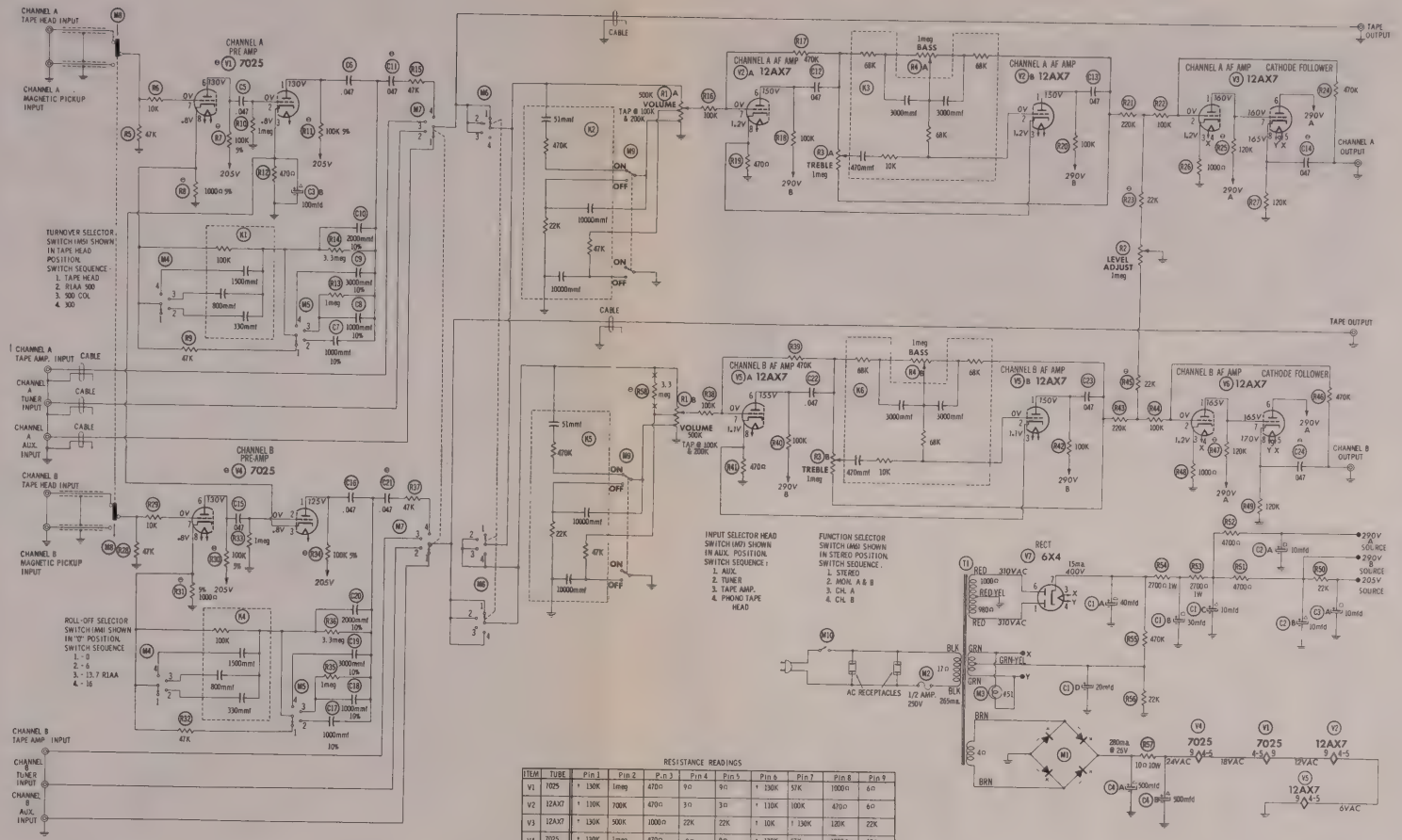
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION


CHANNEL A TAPE HEAD INPUT
CHANNEL A MAGNETIC PICKUP INPUT
CHANNEL A PRE AMP V1 7025
TURNOVER SELECTOR SWITCH (MS) SHOWN IN TAPE HEAD POSITION. SWITCH SEQUENCE - 1. TAPE HEAD 2. RIAA 500 3. 500 COL 4. 300
CHANNEL A TAPE AMP. INPUT CABLE
CHANNEL A TUNER INPUT CABLE
CHANNEL A AUX. INPUT CABLE
CHANNEL B PRE-AMP V4 7025
CHANNEL B TAPE HEAD INPUT
CHANNEL B MAGNETIC PICKUP INPUT
ROLL-OFF SELECTOR SWITCH (M4) SHOWN IN "0" POSITION. SWITCH SEQUENCE 1. 0 2. -6 3. -13.7 RIAA 4. -16
CHANNEL B TAPE AMP. INPUT
CHANNEL B TUNER INPUT
CHANNEL B AUX. INPUT
CABLE
CHANNEL A AF AMP V2 A 12AX7
CHANNEL A AF AMP V2 B 12AX7
CHANNEL A AF AMP CATHODE FOLLOWER V3 12AX7
CHANNEL A OUTPUT
TAPE OUTPUT
LEVEL ADJUST 1meg
CHANNEL B AF AMP V5 A 12AX7
CHANNEL B AF AMP V5 B 12AX7
CHANNEL B AF AMP CATHODE FOLLOWER V6 12AX7
CHANNEL B OUTPUT
INPUT SELECTOR HEAD SWITCH (M7) SHOWN IN AUX. POSITION. SWITCH SEQUENCE: 1. AUX. 2. TUNER 3. TAPE AMP. 4. PHONO TAPE HEAD
FUNCTION SELECTOR SWITCH (M9) SHOWN IN STEREO POSITION. SWITCH SEQUENCE. 1. STEREO 2. MON. A & B 3. CH. A 4. CH. B
RECT V7 6X4
AC RECEPTACLES
1/2 AMP. 250V
290V SOURCE
205V SOURCE
24VAC
18VAC
12VAC
6VAC
7025
12AX7

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	* 130K	1meg	470Ω	9Ω	9Ω	* 130K	57K	1900Ω	6Ω
V2	12AX7	* 110K	700K	470Ω	3Ω	3Ω	* 110K	100K	470Ω	6Ω
V3	12AX7	* 130K	500K	1000Ω	22K	22K	† 10K	† 130K	120K	22K
V4	7025	* 130K	1meg	470Ω	9Ω	9Ω	* 130K	57K	1000Ω	12Ω
V5	12AX7	* 110K	700K	470Ω	3Ω	3Ω	* 110K	100K	470Ω	0Ω
V6	12AX7	* 130K	500K	1000Ω	22K	22K	† 10K	† 130K	120K	22K
V7	6X4	980Ω	NC	22K	22K	NC	1000Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 7 OF V7.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

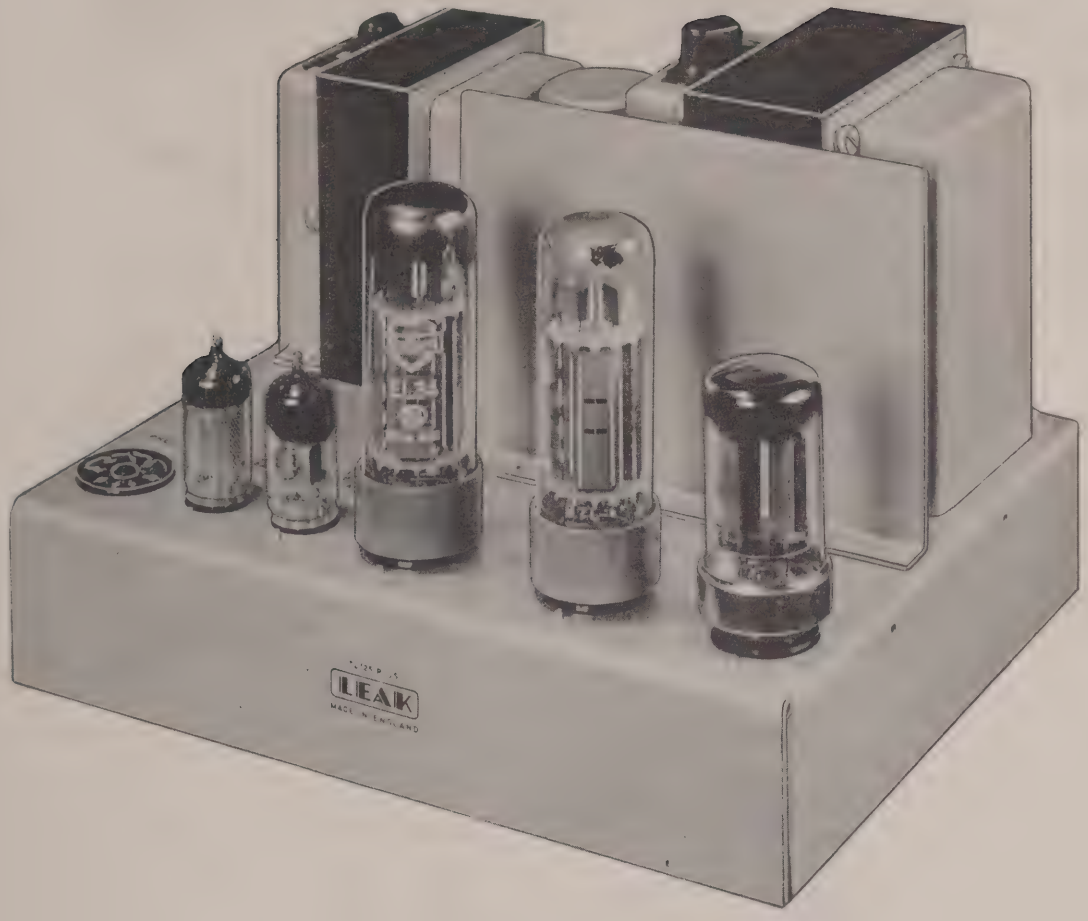
GROMMES
MODEL 208

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

LEAK MODEL TL/25 Plus

LEAK MODEL
TL/25 Plus



LEAK MODEL
TL/25 Plus

TRADE NAME	Leak TL/ 25 Plus
IMPORTER	British Industries Corp., 80 Shore Road, Port Washington, N. Y.
TYPE SET	AC Operated Audio Amplifier
TUBES	Five
POWER SUPPLY	105/ 110/ 117 Volts AC-60 Cycles RATING 115 Watts, 1.15 Amp. @117 Volts AC.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H760

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	EF86	①
V2	AF Amp. -Phase Inv.	ECC81/12AT7	②
V3	Output	EL34/6CA7	③

ITEM No.	USE	TYPE	NOTES
V4	Output	EL34/6CA7	③
V5	Rectifier	GZ34/5U4	④

① Alternate Types 6267, Z729.
② Alternate Type B039.
③ Alternate Types KT66, 5881.
④ Alternate Types 5V4, 5AR4.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	LEAK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	16	550		PRS600V16	BRHV616				R2722 *
B	16	550		PRS600V16	BRHV616				
C2A	8	450		PRS450V168	BBRD16845		TDLD-25	MTD-308	R2694 *
B	16	450							
C3	1	350		PRS450V1	BR145			MMT-4501	R1260 *
C4	50	12		PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C5	50	50		PRS50V50	BR505	TC39	TD-50-50	MT-0550	TVA-1308
C6	50	50		PRS50V50	BR505	TC39	TD-50-50	MT-0550	TVA-1308

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	LEAK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	1000			BPD-001	DD-102	LT6D1	UC-521	5HK-D1	5%
C8	150			1469-00015	DD-151	5R5T15	MCE236	MS-315	
C9	.1	350		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C10	.1	350		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C11	.25	350		P488N-25		CUB4P25	GEM-4025	4TM-P25	
C12	.25	350		P488N-25		CUB4P25	GEM-4025	4TM-P25	

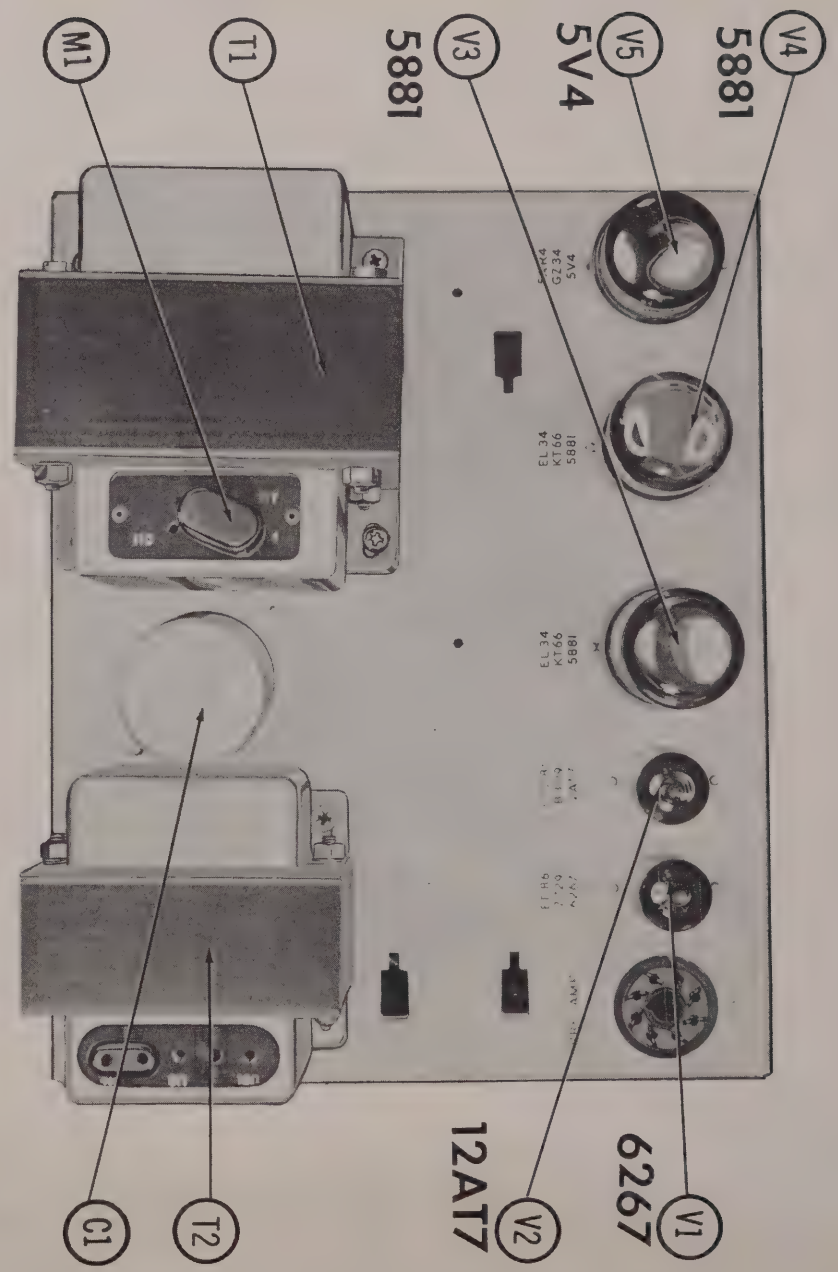
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		LEAK PART No.	NOTES
	OHMS	WATT		
R1	22K			
R2	1meg			
R3	150K			
R4	1meg			
R5	100K	1		
R6	2200Ω			
R7	100Ω			
R8	18K			
R9	1.5meg			
R10	91K 5%	1		
R11	1000Ω			

ITEM No.	RATING		LEAK PART No.	NOTES
	OHMS	WATT		
R12	22K	1		
R13	1.5meg			
R14	100K 5%	1		
R15	27K	1		
R16	10K			
R17	1meg			
R18	440Ω 5%	2		
R19	10K			
R20	1meg			
R21	440Ω 5%	2		
R22	100Ω 5%	2		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
				LEAK PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
	PRI.	SEC. 1	SEC. 2							
T1	117V @ 1.15A Tap @ 110V, 105V	740VCT @.150A	5V @1.5A	3974	P9316 ①	P3173 ①		PC8411 ①	22R33 ①	R-16A ①
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT @3.4A									

① Drill new mounting holes. Primary taps not provided.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
			LEAK PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.								
T2	7000Ω CT Screen Taps @ 2000Ω CT	16Ω Taps @ 8Ω, 4Ω	3925	H-4103 ①					S-142A ①	① Drill new mounting holes.

FUSES

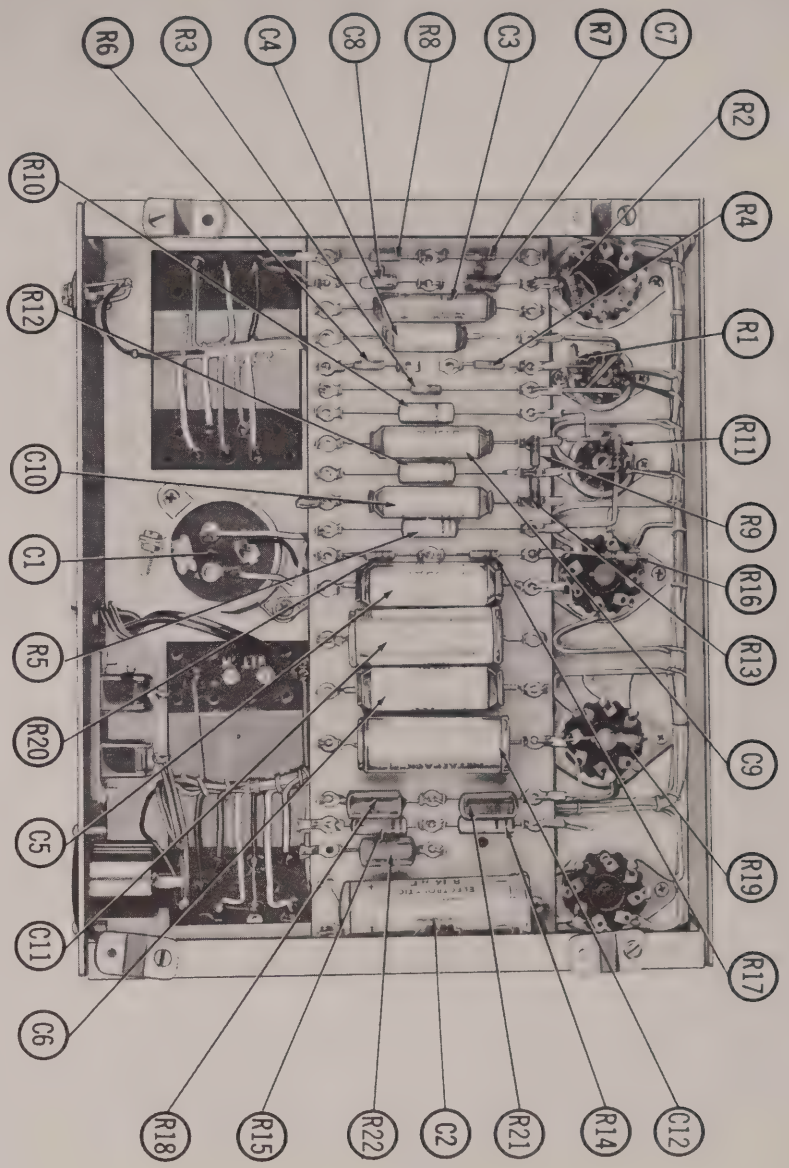
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			LEAK PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		2A 250V						

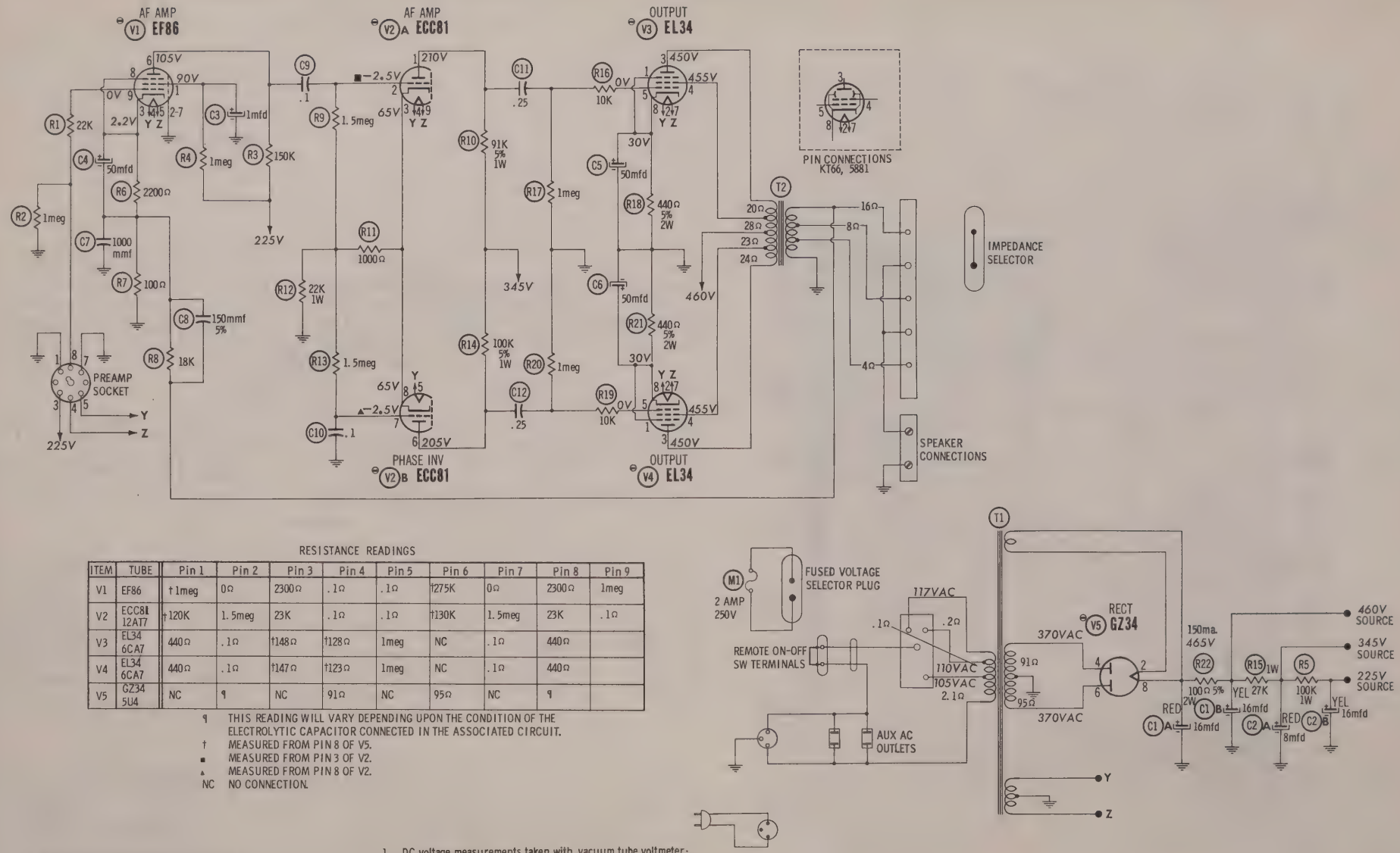
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF86	†1meg	0Ω	2300Ω	.1Ω	.1Ω	†275K	0Ω	2300Ω	1meg
V2	ECC81 12AT7	†120K	1.5meg	23K	.1Ω	.1Ω	†130K	1.5meg	23K	.1Ω
V3	EL34 6CA7	440Ω	.1Ω	†148Ω	†128Ω	1meg	NC	.1Ω	440Ω	
V4	EL34 6CA7	440Ω	.1Ω	†147Ω	†123Ω	1meg	NC	.1Ω	440Ω	
V5	GZ34 5U4	NC	¶	NC	91Ω	NC	95Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 8 OF V5.
■ MEASURED FROM PIN 3 OF V2.
▲ MEASURED FROM PIN 8 OF V2.
NC NO CONNECTION.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

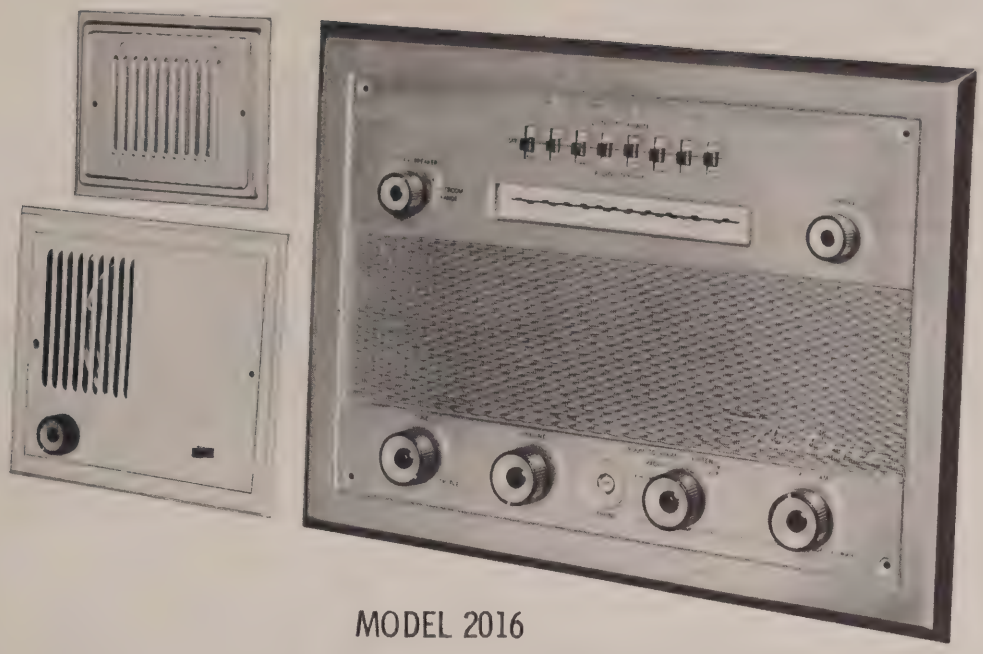
©Howard W. Sams & Co., Inc. 1959

LEAK MODEL TL/25 Plus

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

NUTONE MODELS
2015, 2016

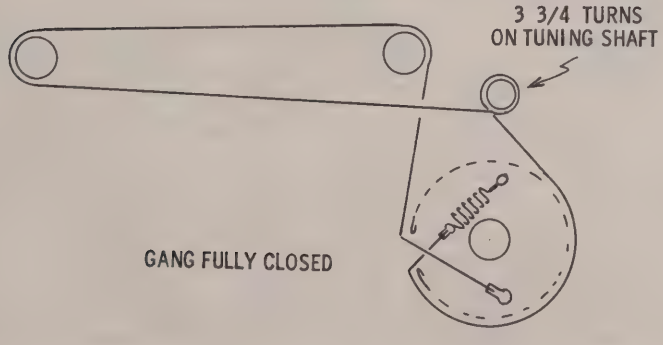


MODEL 2016

NUTONE MODELS
2015, 2016

TRADE NAME	Nutone Models 2015, 2016
MANUFACTURER	Nutone, Inc., Madison & Red Bank Roads, Cincinnati 27, Ohio
TYPE SET	AC Operated FM-AM Receiver and Intercommunications Unit
TUBES	Seven
POWER SUPPLY	110 - 120 Volts AC -60 Cycles RATING 38 Watts, 42 Amp. @ 117 Volts AC

DIAL CORD STRINGING

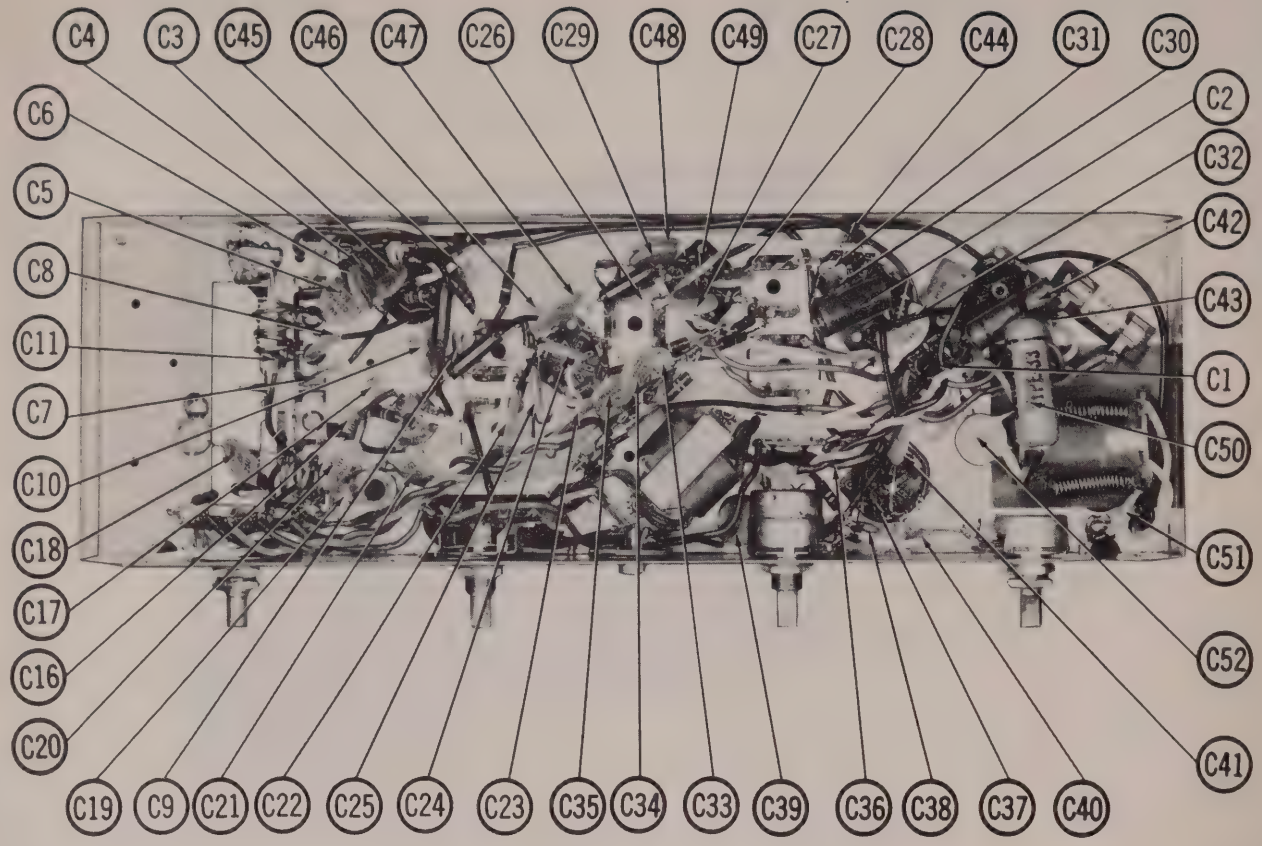


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

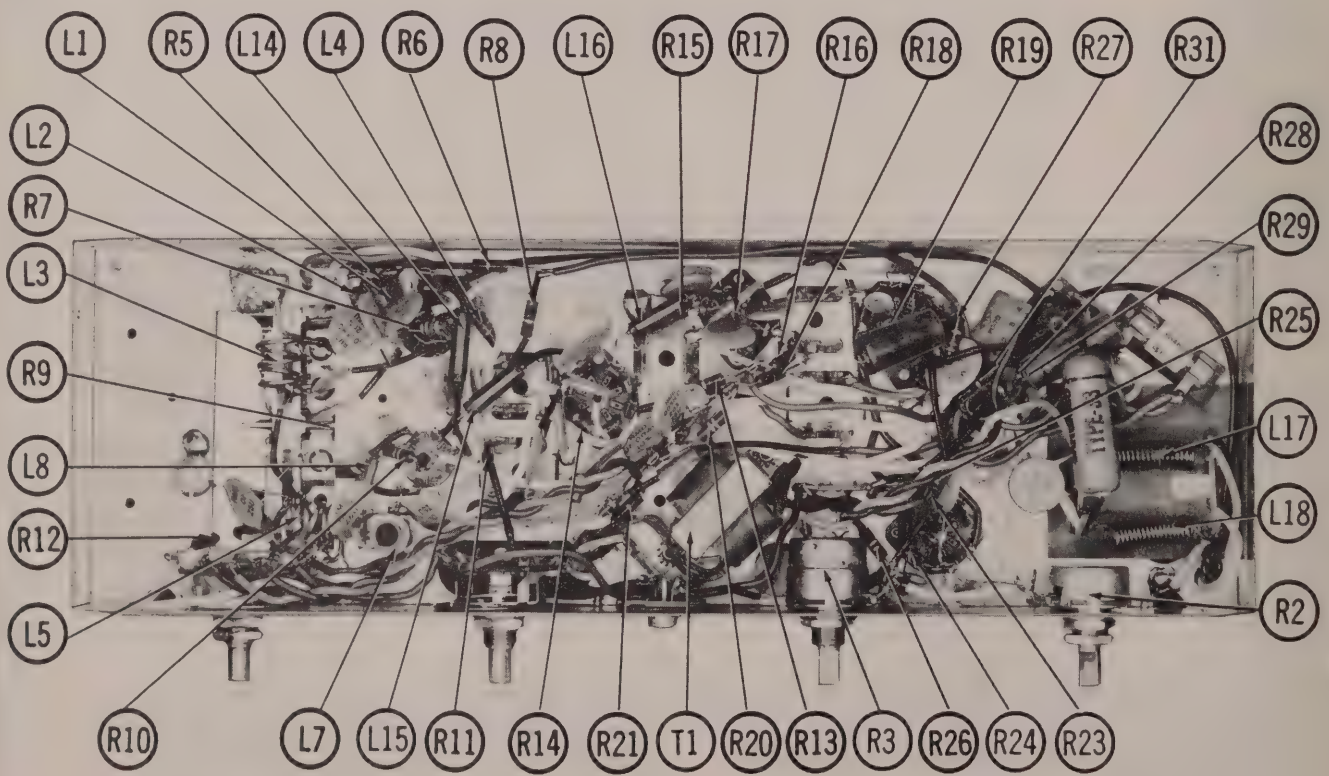
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H815

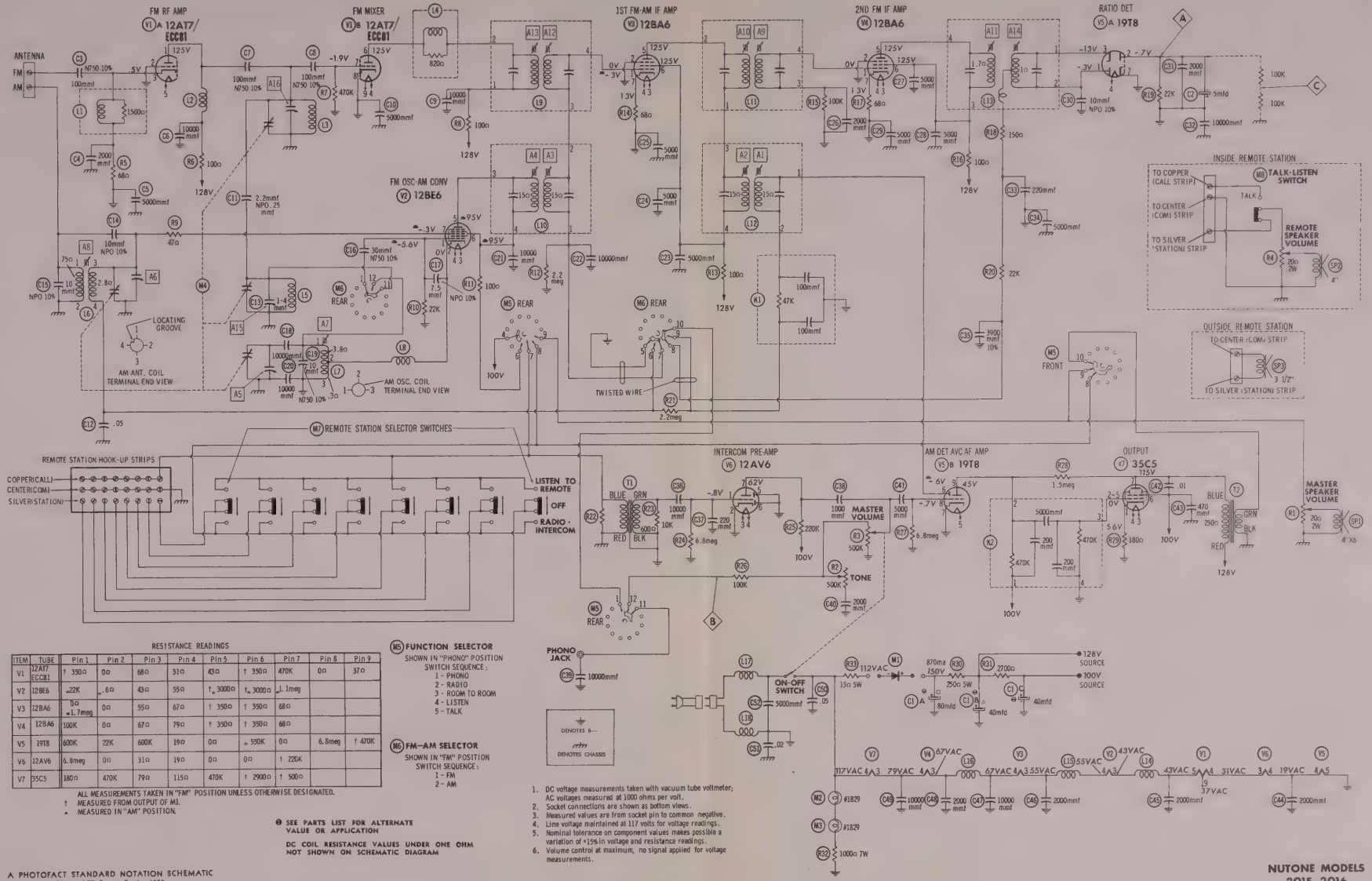
SET 430 FOLDER 9



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AT7 ECC81	↑ 350Ω	0Ω	68Ω	31Ω	43Ω	↑ 350Ω	470K	0Ω	37Ω
V2	12BE6	₂22K	₂.6Ω	43Ω	55Ω	↑ₐ3000Ω	↑ₐ 3000Ω	⊥ 1meg		
V3	12BA6	0Ω ₂1.7meg	0Ω	55Ω	67Ω	↑ 350Ω	↑ 350Ω	68Ω		
V4	12BA6	100K	0Ω	67Ω	79Ω	↑ 350Ω	↑ 350Ω	68Ω		
V5	19T8	600K	22K	600K	19Ω	0Ω	₂ 550K	0Ω	6.8meg	↑ 470K
V6	12AV6	6.8meg	0Ω	31Ω	19Ω	0Ω	0Ω	↑ 220K		
V7	35C5	180Ω	470K	79Ω	115Ω	470K	↑ 2900Ω	↑ 500Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
↑ MEASURED FROM OUTPUT OF M1.
₂ MEASURED IN "AM" POSITION.

M5 FUNCTION SELECTOR
SHOWN IN "PHONO" POSITION
SWITCH SEQUENCE:
1 - PHONO
2 - RADIO
3 - ROOM TO ROOM
4 - LISTEN
5 - TALK

M6 FM-AM SELECTOR
SHOWN IN "FM" POSITION
SWITCH SEQUENCE:
1 - FM
2 - AM

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

NUTONE MODELS 2015, 2016

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Suggested alignment tools:

A1, A2, A3, A4, A9, A10, A11, A12, A13, A14.....	General Cement #8727, 9291 Walsco #2515
A6.....	General Cement #8606, 8606L Walsco #2544, 2545, 2543
A7.....	General Cement #8821, 8896, 8272, 9298, 9150, 8276, 8273, 9087, 8722, 5003, 8609, 8290, 8271, 8721, 5000 Walsco #2518, 2515, 2525, 2524, 2516, 2541
A5, A6, A15, A16.....	General Cement #5008, 9294, 8275 Walsco #2538, 2534, 2522, 2520, 2537

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open	DC probe to high side of R3. Common to B-.	A1, A2	Adjust for maximum deflection. Use lowest signal not more than 10DB above background noise.
2.	10mmf	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	"	"	Point of non-interference near mid-scale	"	A3, A4	Adjust for maximum deflection. Do not repeat step 1.
3.	50mmf	High side to AM antenna terminal. Low side to chassis.	1400KC	"	1400KC	"	A5, A6	Adjust for maximum deflection.
4.	"	"	600KC	"	600KC	"	A7, A8	Adjust for maximum deflection. Correct "A8" adjustment is when slug is between coils of L6. Repeat steps 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR & VTVM

Connect two matched 100K (±1%) resistors in series from point Ⓐ to B-. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01mfd	High side to pin 1 (grid) of of 12BA6 (V3). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point Ⓐ. Common to B-.	A9, A10, A11	Adjust for maximum deflection.
6.	"	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	"	"	"	"	A12, A13	"
7.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR & OSCILLOSCOPE

Connect two matched 100K (±1%) resistors in series from point Ⓐ to B-. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01mfd	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to B-.	A9, A10, A11	Disconnect stabilizing capacitor (C2). Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
6.	"	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	"	"	"	"	A12, A13	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1
7.	"	High side to pin 1 (grid) of 12BA6 (V4). Low side to chassis.	"	"	"	Vert. Amp. to point Ⓑ. Low side to B-.	A14	Reconnect stabilizing capacitor (C2). Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.
8.	.01mfd	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓑ. Low side to B-.		Observe detector curve (Fig. 2) at low signal level (just above noise). If necessary, SLIGHTLY retouch A9, A10, A12 and A13 for maximum straightness of crossover lines, being careful not to reduce curve amplitude.

(continued)

ALIGNMENT INSTRUCTIONS (cont)

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω Carbon Resistor	High side to FM antenna terminal. Low side to chassis.	106MC	FM	106MC	DC probe to point Ⓐ. Common to B-.	A15	Adjust for maximum deflection.
10.	"	"	"	"	"	"	A16	"
11.	"	"	90MC	"	90MC	"	L5	Adjust for maximum deflection by compressing or expanding coil turns.
12.	"	"	"	"	"	"	L3	Adjust for maximum deflection by compressing or expanding coil turns.

Repeat steps 9, 10, 11 and 12 if necessary to insure proper tracking.

FIG. 1

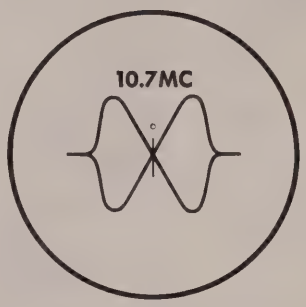
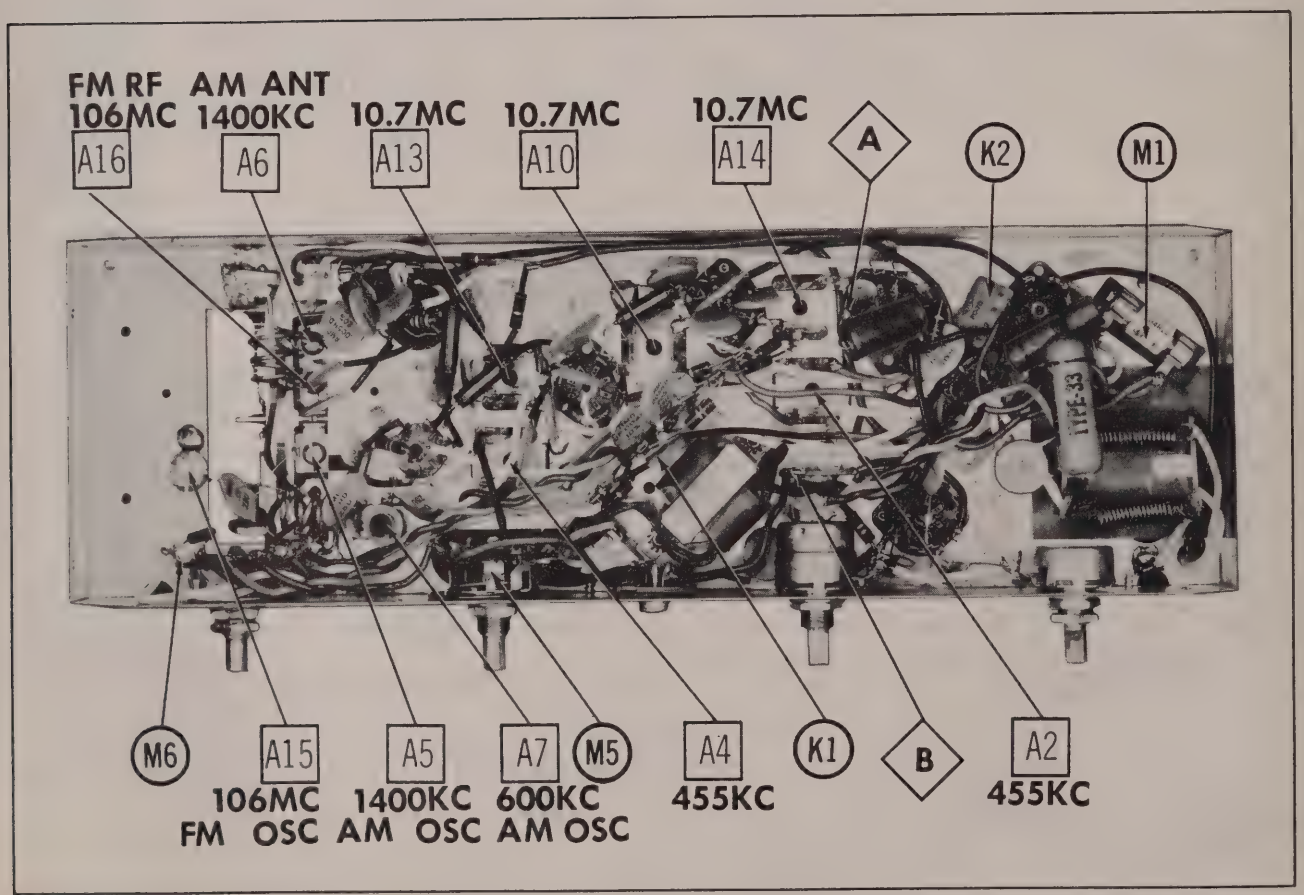


FIG. 2



CHASSIS BOTTOM VIEW- ALIGN & MISC IDENT

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amp. -FM Mixer	12AT7/ ECC81	
V2	FM Osc. -AM Conv.	12BE6	
V3	1st FM-AM IF Amp.	12BA6	
V4	2nd FM IF Amp.	12BA6	
V5	Ratio Detector -AM Det.- AVC-AF Amp.	19T8	
V6	Intercom Preamp.	12AV6	
V7	Output	35C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	NUTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■80	150	23B31 ①	AFH3-12-20	C0120	FP311.5	TMT-13	T-055	R2741 *
B	▲40	150			BBR20-150	TC48	TD-20-150	MT-1520	
C	40	150							
C2	5	50	23B34	PRS50V5	BBR5-50	TT50X5	TD-5-50	MMT-0505	TVA-1303

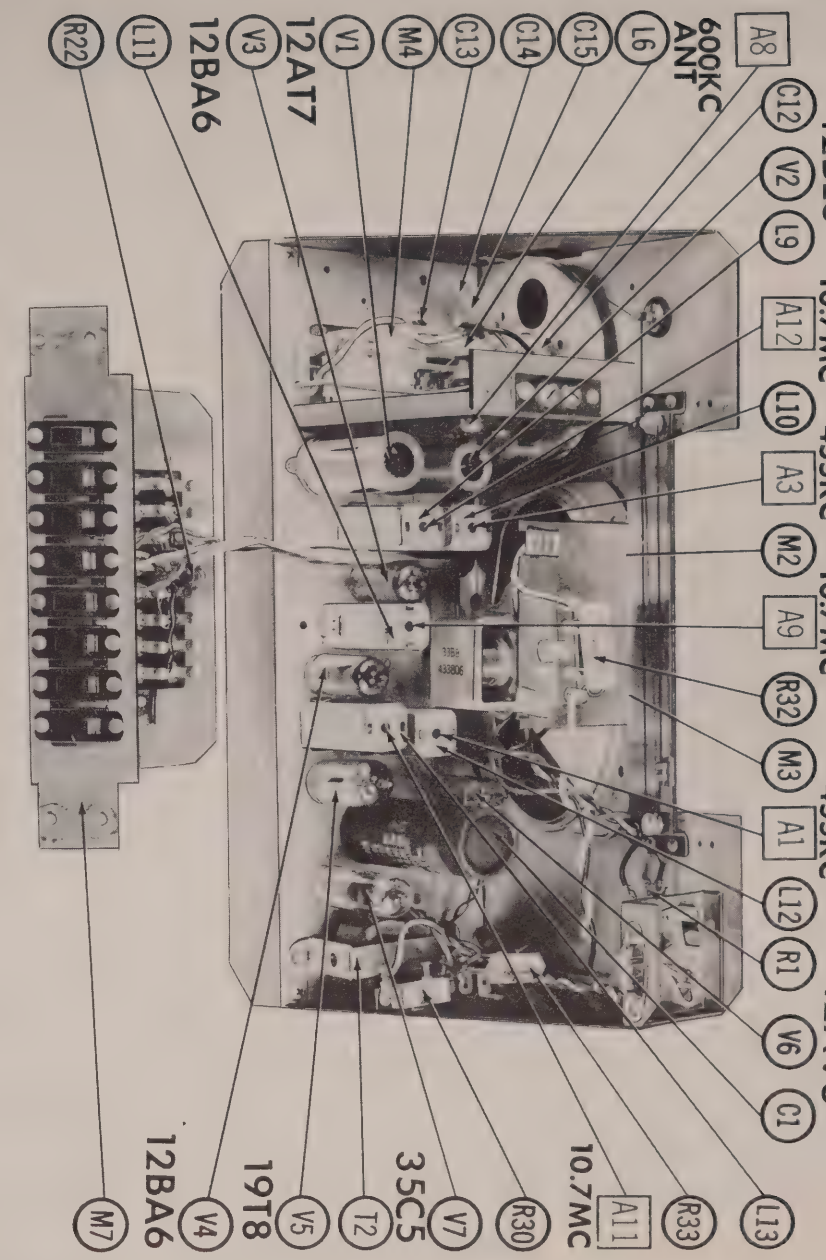
① Some versions use 200 volt unit for C1.
* Not normally in distributors stock. Available through distributors on order to manufacturer

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	NUTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	100	1000	24B20						N750 10%
C4	2000	1000	24B42	DAC-3	DD-202	BYA10D2		5GA-D2	
C5	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C6	10000		24B44	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C7	100	1000	24B20						N750 10%
C8	100	1000	24B20						N750 10%
C9	10000		24B44	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C11	2.2	1000	24B33						NPO .25mmf
C12	05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C13	1-4		25A6						
C14	10	1000	B20141P14						NPO 10%
C15	10	1000	B20141P14						NPO 10%
C16	30	1000	24B40						N750 10%
C17	7.5	1000	24B38						NPO 10%
C18	10000	1000	24B46	DAC-27	DD16-103	BYA10S1M		BL-S10	
C19	10	1000	24B53						N750 10%
C20	10000	1000	24B50	DAC-27	DD16-103	BYA10S1M		BL-S10	
C21	10000		24B44	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C22	10000		24B44	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C23	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C24	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C25	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C26	2000	1000	24B42	DAC-3	DD-202	BYA10D2		5GA-D2	
C27	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C28	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C29	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C30	10	1000	B20141P14						NPO 10%
C31	2000	1000	24B42	DAC-3	DD-202	BYA10D2		5GA-D2	
C32	10000	1000	24B50	DAC-27	DD16-103	BYA10S1M		BL-S10	
C33	220	1000	24B52	HVD-15-220	DD-221	L10T22	DC30322	5GA-T22	
C34	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C35	3900	1000	24B49						10%
C36	10000		24B44	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C37	220	1000	24B52	HVD-15-220	DD-221	L10T22	DC30322	5GA-T22	
C38	1000	1000	24B41	DAC-2	DD-102	BYA10D1M	DC3021	5GA-D1	
C39	10000	1000	24B46	DAC-27	DD16-103	BYA10S1M		BL-S10	
C40	2000	1000	24B42	DAC-3	DD-202	BYA10D2		5GA-D1	
C41	5000		24B36	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C42	.01	400	B20047P56	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C43	470	1000	24B47	HVD-15-470	DD-471	L10T47	DC30347	5GA-T47	
C44	2000	1000	24B42	DAC-3	DD-202	BYA10D2		5GA-D2	
C45	2000	1000	24B42	DAC-3	DD-202	BYA10D2		5GA-D2	
C46	2000	1000	24B42	DAC-3	DD-202	BYA10D2		5GA-D2	
C47	10000	1000	24B46	DAC-27	DD16-103	BYA10S1M		BL-S10	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA NUTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C48	2000	1000	24B42	DAC-3	DD-202	BYA10D2		5GA-D2	
C49	10000	1000	24B46	DAC-27	DD16-103	BYA10S1M		BL-S10	
C50	.05	600	B20047P80	P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C51	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	
C52	5000	1000	24B51	DAC-9	DD-502	BYA10D5M		5GA-D5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA NUTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	20Ω	2(WW)	15B16	WW-200 †	A43-20	WPK20		Master Speaker Volume
B	Shaft			Not Req.	FS-3	Not Req.		
R2A	500K	½	15B19	B-60				Tone
B	Shaft			Not Req.				
R3A	500K	½	15B14	B-60				Master Volume
B	Shaft			Not Req.				
C	Switch			KB-1 or KR-1*				
R4A	20Ω	2(WW)	15B16	WW-200 †	A43-20	WPK20		Remote Speaker Volume
B	Shaft			Not Req.	FS-3	Not Req.		

† Saw off shaft and file flat to fit knob.
* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	NUTONE PART No.	NOTES
R5	68Ω			
R6	100Ω			
R7	470K			
R8	100Ω			
R9	47Ω			
R10	22K			
R11	100Ω			
R12	2.2meg			
R13	100Ω			
R14	68Ω			
R15	100K			
R16	100Ω			
R17	68Ω			
R18	150Ω			
R19	22K			

ITEM No.	RATING OHMS	RATING WATT	NUTONE PART No.	NOTES
R20	22K			
R21	2.2meg			
R22	3.3Ω			
R23	10K			
R24	6.8meg			
R25	220K			
R26	100K			
R27	6.8meg			
R28	1.5meg			
R29	180Ω			
R30	250Ω	5		
R31	2700Ω			
R32	1000Ω	7		
R33	15Ω	5		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA NUTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	RF Choke	31A20					Wound On 1500Ω
L2	RF Choke	31A18					4.7 Microhenries
L3	FM RF Coil	31A13					
L4	RF Choke	31A19					Wound On 820Ω
L5	FM Osc. Coil	31A14					
L6	AM Ant. Coil	32A32	14-1075 *				* Remove C14
L7	AM Osc. Coil	31A1					
L8	Cathode Choke	31A22	19-1001	BC-562	4604		1.6 Microhenries
L9	1st FM IF	32B24	16-3487	FM-254	1463		
L10	1st AM IF	32B25	16-6758	BC-352	12-C1	RF-1	
L11	2nd FM IF	32B24	16-3487	FM-254	1463		
L12	2nd AM IF	32B25	16-6758	BC-353	12-C2	RF-2	
L13	Ratio Detector	32B28	17-3498	FM-255	1465		
L14	Fil. Choke	31A21	19-1003	BC-564	4608		3.7 Microhenries
L15	Fil. Choke	31A21	19-1003	BC-564	4608		3.7 Microhenries
L16	Fil. Choke	31A21	19-1003	BC-564	4608		3.7 Microhenries
L17	Line Choke	31B8	19-1001	BC-562	4604		1.4 Microhenries
L18	Line Choke	31B8	19-1001	BC-562	4604		1.4 Microhenries

TRANSFORMER (INPUT)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA NUTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1	: 47	32B23		A-2927		24S81	S-11Z	
	IMPEDANCE								
	3-4Ω	8000Ω							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA NUTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5300Ω	3-4Ω	32B41	Z1107	A-2930	AU-601	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA NUTONE PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	3-4Ω	33B8	46A1	Master Station
SP2	4"	PM	3-4Ω	33A9	4A1	Inside Remote Station
SP3	3 1/2"	PM	3-4Ω	33A5	3A07	Outside Remote Station

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	NUTONE PART No.	REPLACEMENT DATA
K1	Diode RF Filter	100mmf, 100mmf, 47K	57A2	Aerovox PA-97-1 Centralab PC-50 Cornell-Dubilier 111TM1 Sprague D-1
K2	Audio Coupling Circuit	200mmf, 200mmf, 5000mmf, 470K, 470K	57A3	Aerovox PA-112-1 Centralab PC-70 Cornell-Dubilier 112TM1 Sprague T-3

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA NUTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.087A	42B5 ①		SD-94 ①	150 ①	① Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	NUTONE PART No.	NOTES
M2	Lamp	41X6	GE #1829, 28V. @ .070A.
M3	Lamp	41X6	GE #1829, 28V. @ .070A.
M4	Tuning Cap.	25B4	AM-FM 4 Gang (AM Sections: Ant. 14-495mmf, Osc. 8-167 mmf)
M5	Switch	43B28	Master Function Selector, 5 Position, Rotary, Wafer, Spring Return Type
M6	Switch	43B15	AM-FM Selector, Rotary, Wafer Type
M7	Switch	43B17	Remote Station Selector, Single Pole, 3 Position, Slide Type, 8 Used
M8	Switch	43A20	Inside Remote, Talk-Listen, SPDT, Spring Return-Slide Type

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA

OLYMPIC MODEL 441

OLYMPIC MODEL 441

TRADE NAME	Olympic Model 441
MANUFACTURER	Olympic Radio & Tel. Corp., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	AC - DC Operated AM Receiver
TUBES	Five
POWER SUPPLY	105 - 125 Volts AC - DC
RATING	28 Watts, .29 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 - 1620KC

ALIGNMENT INSTRUCTIONS

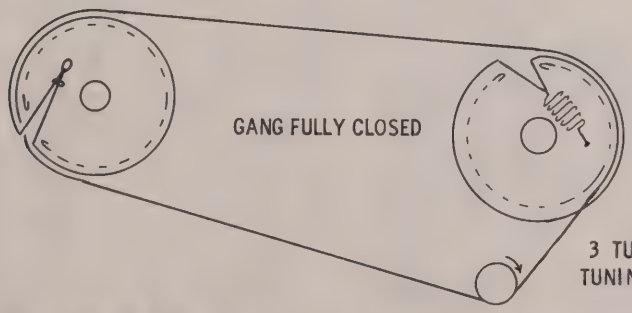
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Suggested alignment tools:
A1, A2, A3, A4..... General Cement #5097, 8727
Walsco #2515
A5, A6..... General Cement #5004, 5008, 5009
Walsco #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna stator lug (Rear section of tuning gang). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.		Loop	1500KC	1500KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H855

SET 430 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	150	C0-1715	AFH2-14	XB0141	FP212	TMD-11	D-060	TVL-2428
B	▲40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.02	400	CO-H-4203	P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C3	.01	400	CO-H-4103	P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C4	.047	400	CO-B-4473	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C5	.1	400	CO-H-4104	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	PT-102	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R2	22K		REB-223M	
R3	68Ω		REB-680M	
R4	2.2meg		REB-225M	

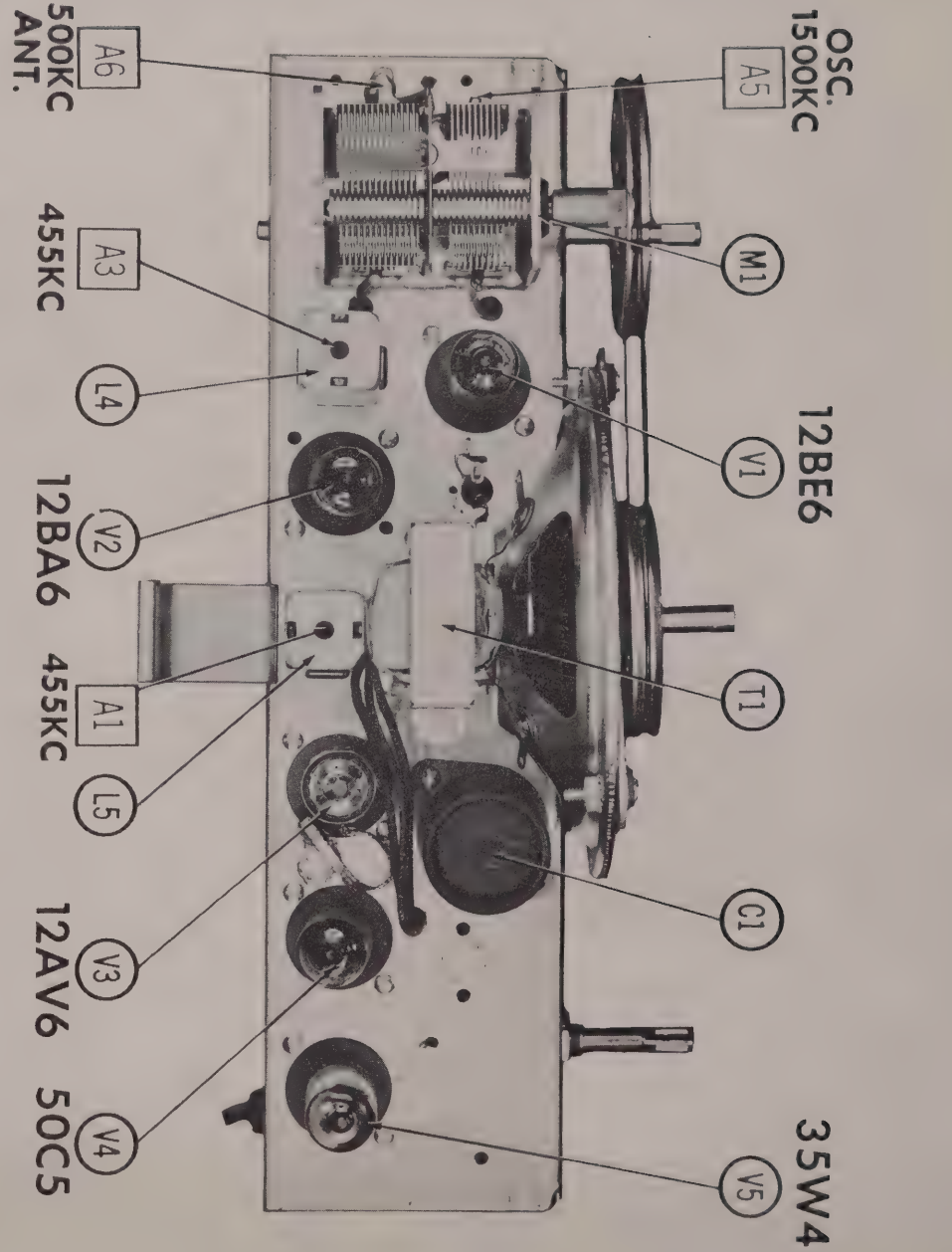
ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R5	150Ω		REB-151K	
R6	1000Ω	1	REC-102M	
R7	220K		REB-224M	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		OLYMPIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.	LP-3244					
L2	RF Choke	①					1.2 Microhenries
L3	Osc. Coil	CL-3291					
L4	Input IF Trans.	TR-1644	16-6758	BC-352	12-C1	RF-1	
L5	Output IF Trans.	TR-1645	16-6758	BC-353	12-C2	RF-2	

① 12 Turns #20 insulated wire wound on C5.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2100Ω Tap @ 200Ω	3-4Ω	Part of SP1	Z1102	A-3031		A-3330	24S50A	S-16X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	SK-3235 ①	5A1R	① Includes T1.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA	
K1	Diode RF Filter	150mmf, 150mmf, 47K	PC-2478	Aerovox Centralab Cornell-Dubilier Sprague	PA-98 PC-51 111TM2 D-2
K2	Audio Coupling Circuit	2000mmf, 220mmf, 250mmf, 5000mmf, 6.8meg, 470K, 470K	PC-2477	Aerovox Centralab Cornell-Dubilier Sprague	PA-113-1 PC-150 116TM1 DT-4

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M1	Tuning Cap.	CV-3120	2 Gang, Ant. 26-495mmf, Osc. 21-177mmf

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

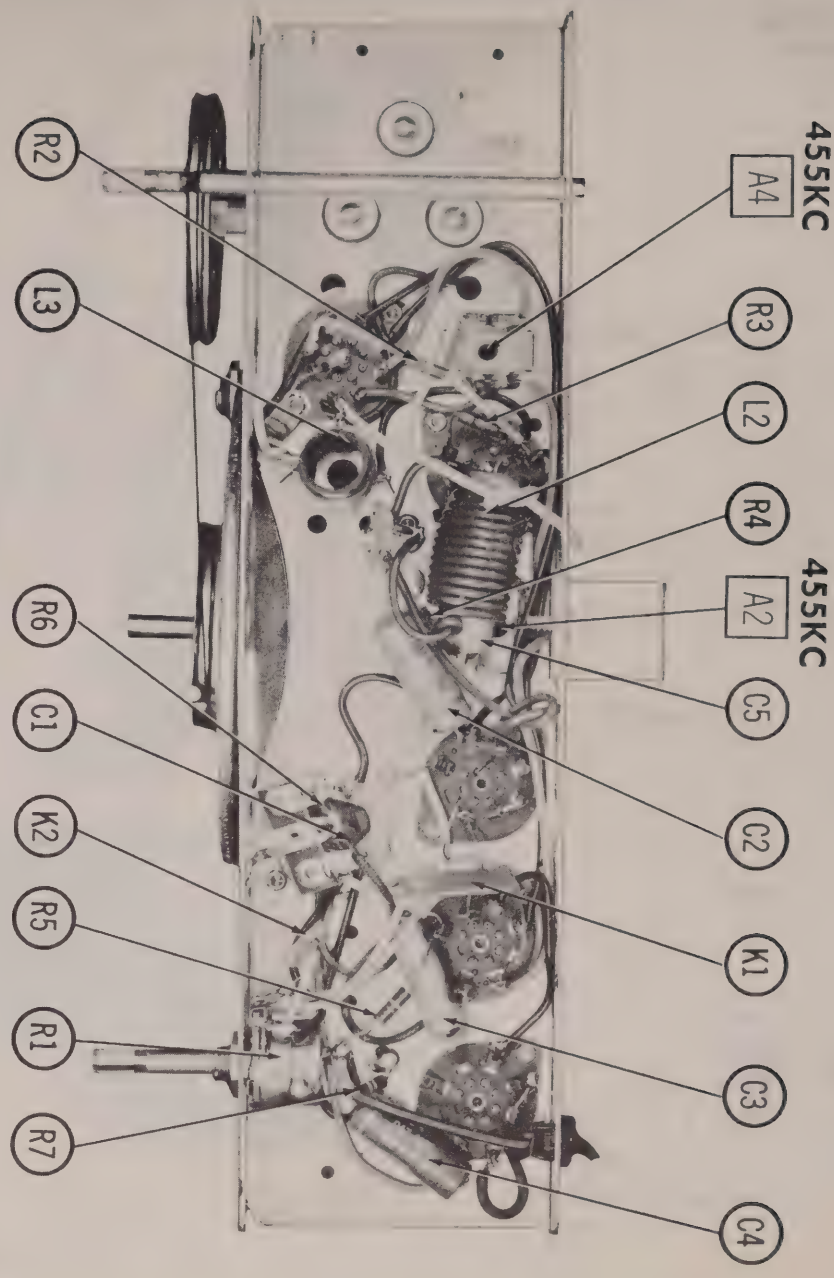
NAME	PART NO.	DESCRIPTION
Knob	KN-3209	Walnut, 2 Used
Knob	KN-3202	Ivory, 2 Used
Knob	KN-3203	Maroon, 2 Used
Knob	KN-3204	Green, 2 Used
Knob	KN-3205	Gray, 2 Used
Knob	KN-3206	Red, 2 Used
Knob	KN-3207	Blue, 2 Used
Cabinet	CA-3200A	Gray
Cabinet	CA-3200B	Blue
Cabinet	CA-3200G	Green
Cabinet	CA-3200M	Maroon
Cabinet	CA-3200R	Red
Cabinet	CA-3200V	Ivory
Cabinet	CA-3200WV	Walnut
Dial Pointer	PO-3229	

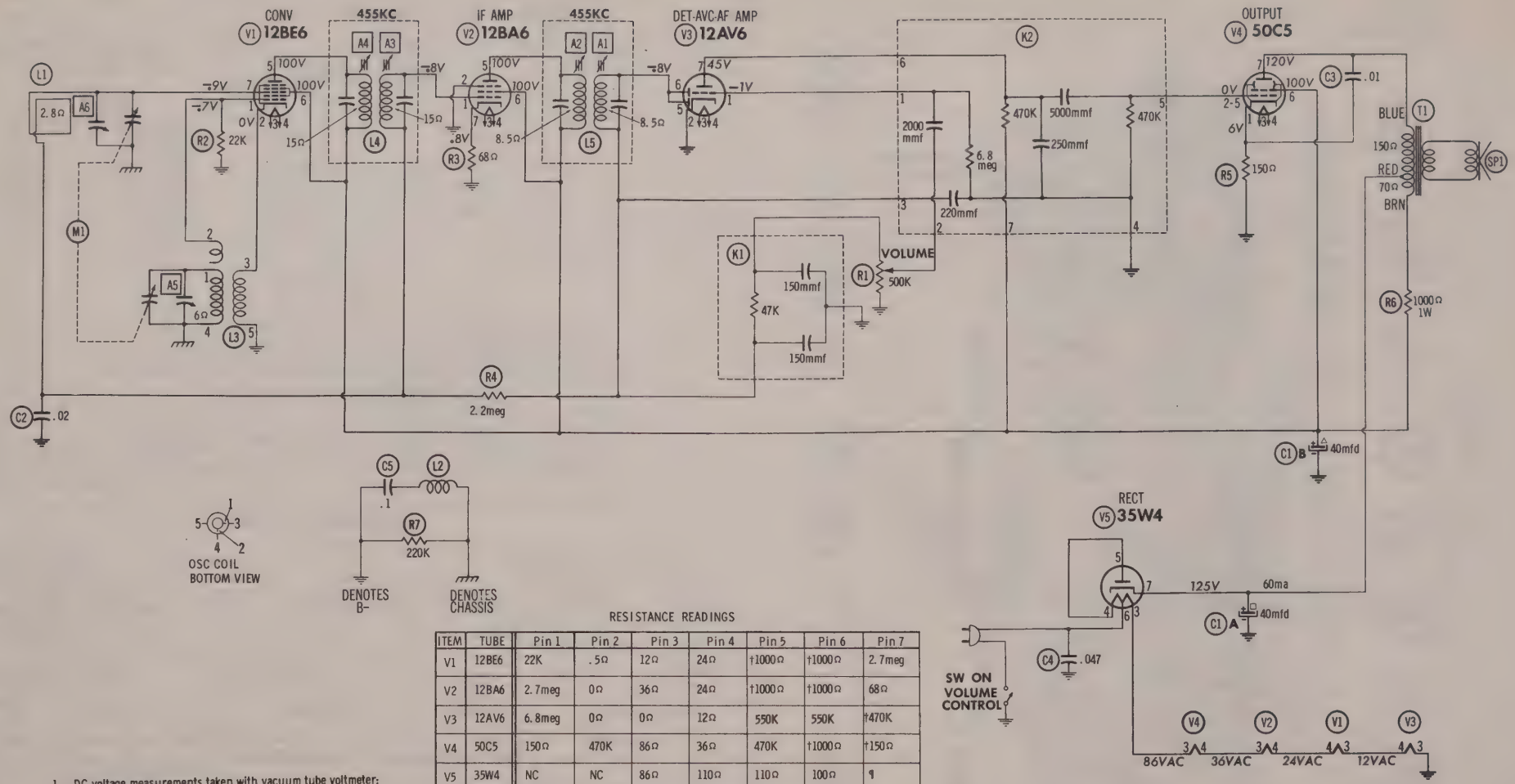
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	12Ω	24Ω	†1000Ω	†1000Ω	2.7meg
V2	12BA6	2.7meg	0Ω	36Ω	24Ω	†1000Ω	†1000Ω	68Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	550K	550K	†470K
V4	50C5	150Ω	470K	86Ω	36Ω	470K	†1000Ω	†150Ω
V5	35W4	NC	NC	86Ω	110Ω	110Ω	100Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

† MEASURED FROM PIN 7 OF V5.

NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959

OLYMPIC MODEL 441

PHOTOFACT* Folder

EIA MEMBER

PILOT
MODEL FM-530

PILOT
MODEL FM-530

PILOT
MODEL FM-530

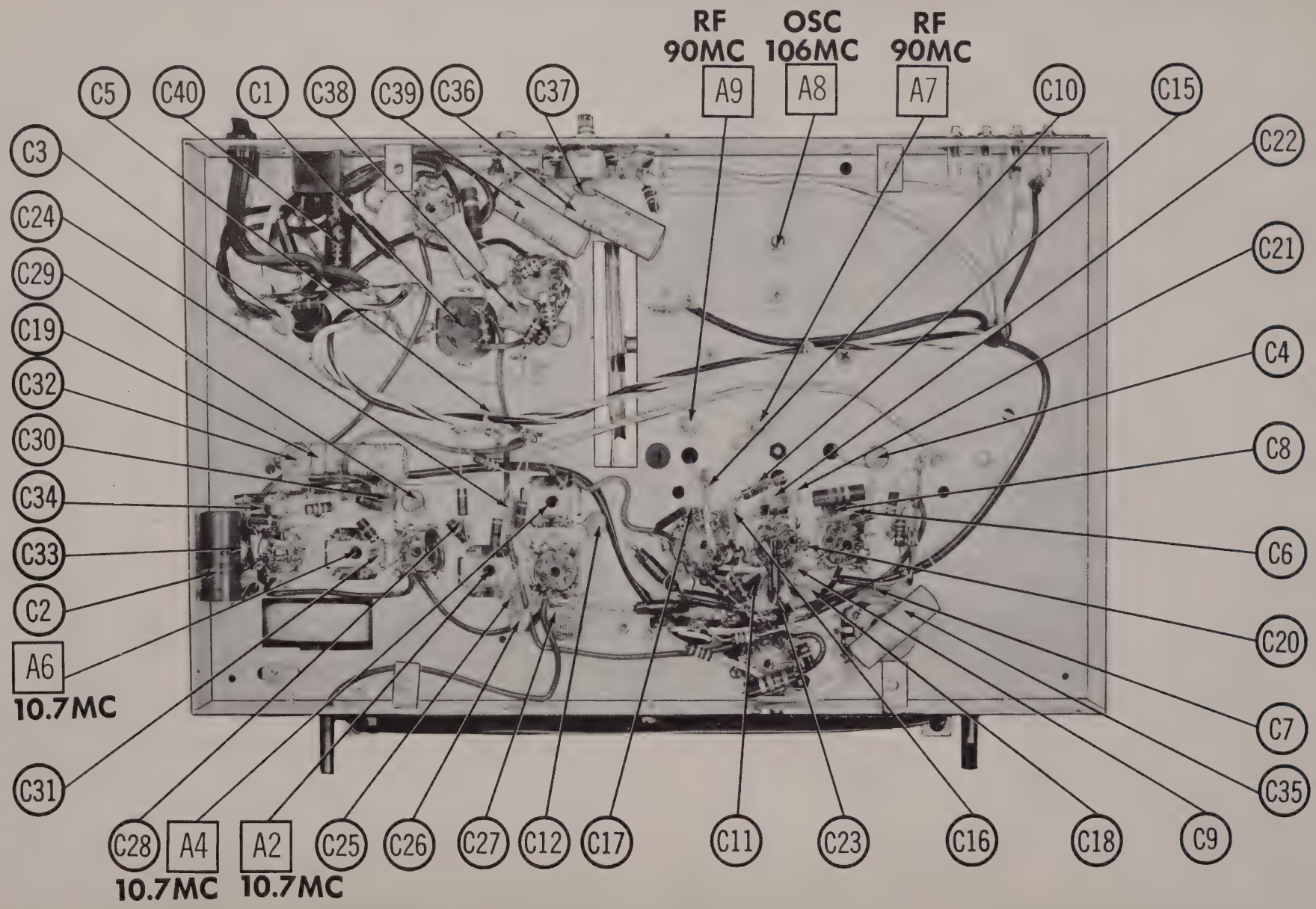
TRADE NAME	Pilot Model FM-530
MANUFACTURER	Pilot Radio Corp., 37-06 36th Street, Long Island City 1, N. Y.
TYPE SET	AC Operated FM Tuner
TUBES	Nine
POWER SUPPLY	105 - 120 Volts AC - 60 Cycles RATING 37 Watts, .375 Amp. @117 Volts AC
TUNING RANGE - FREQ. MOD.	88-108MC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H758

SET 430 FOLDER 11

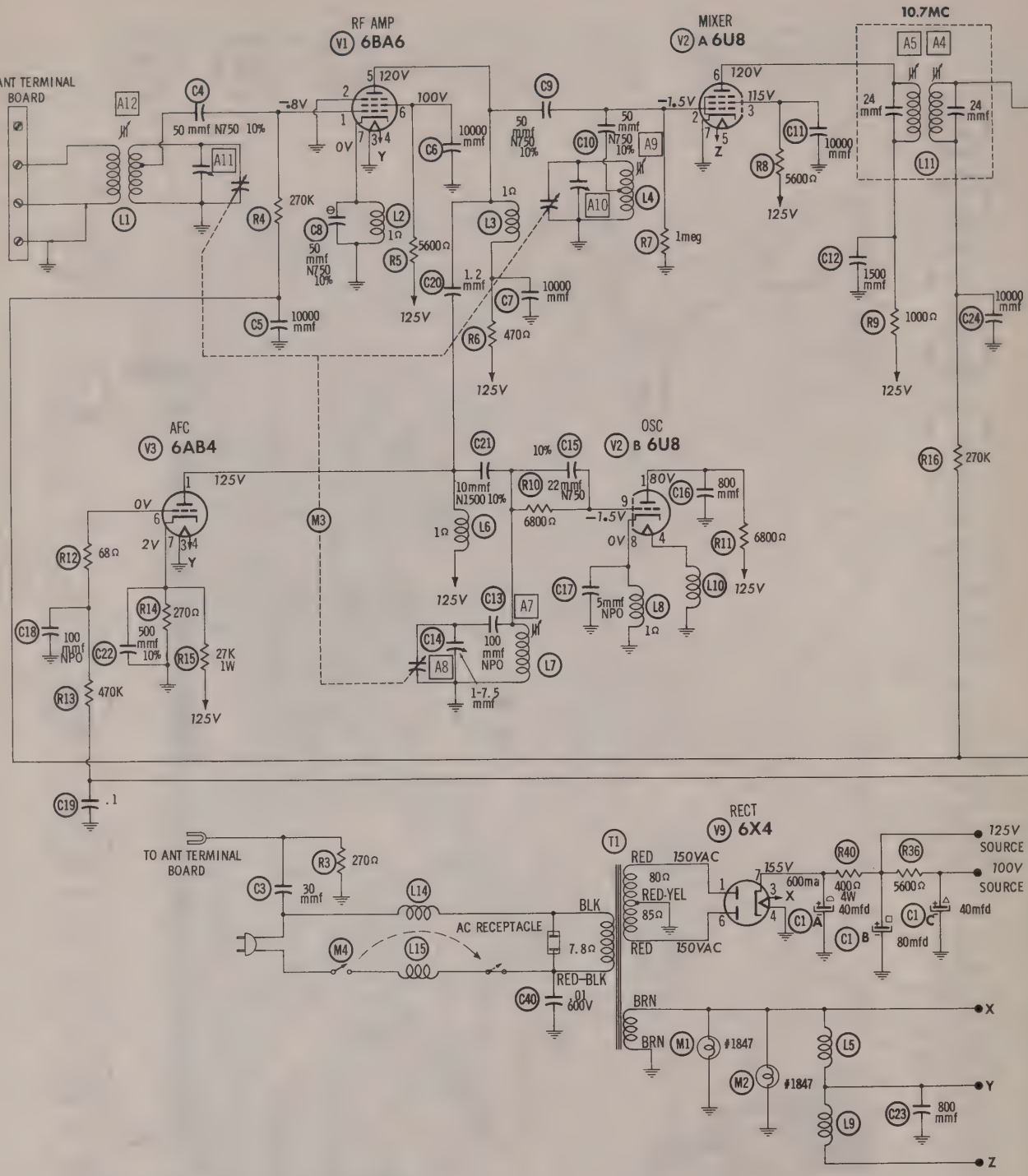


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

MODEL FM-530
PILOT

FOLDER 11



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

INDICATOR ZERO SET ADJUSTMENT (R2)

1. Turn Selector Switch to FM.
2. Remove 6AL5 (V6).
3. Adjust R2 so that the shadow gap edges of V7 are parallel.
4. Reinsert 6AL5 (V6) in socket.

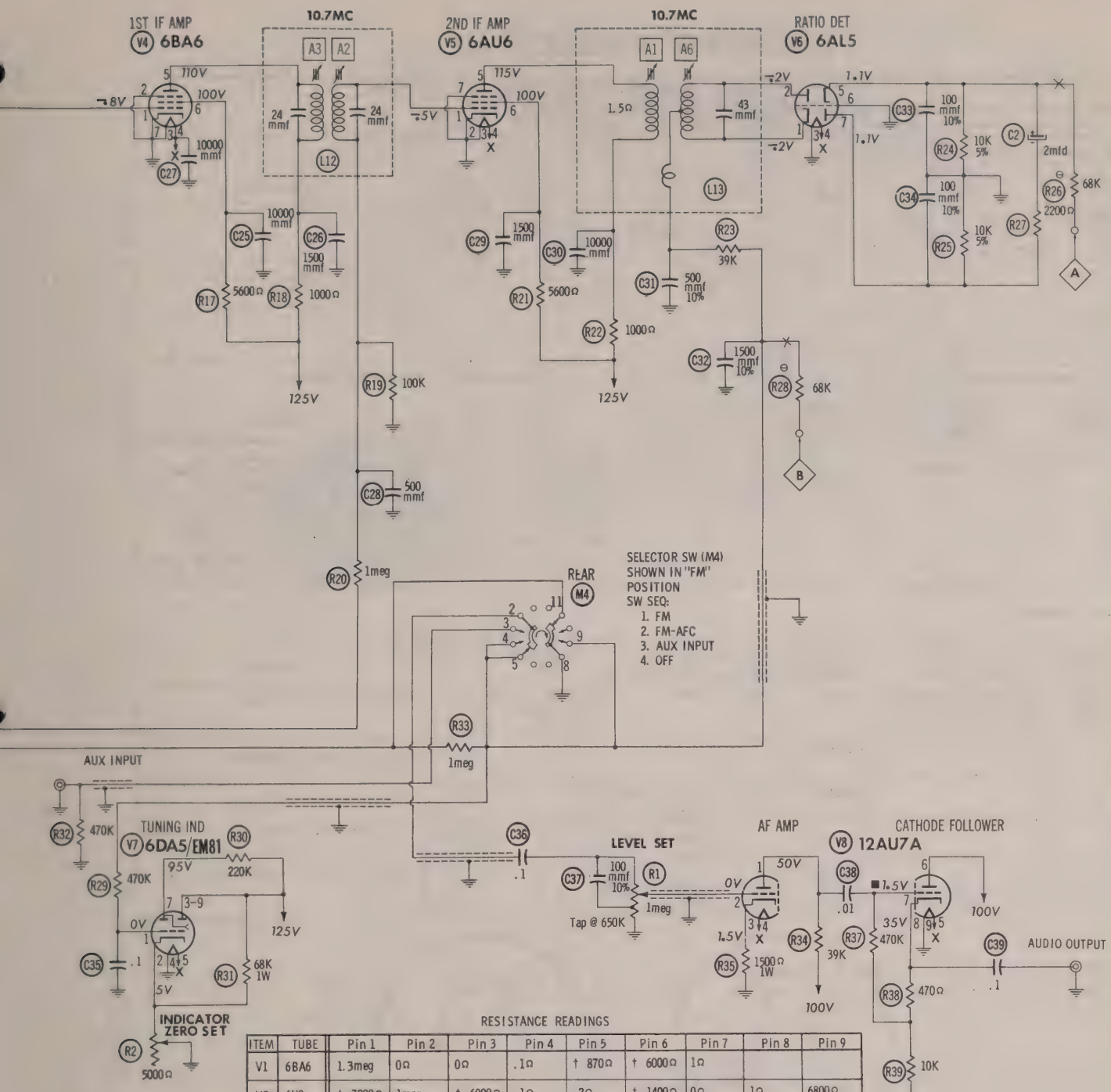
Readjustment may be necessary if V7 is replaced.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BA6	1.3meg	0Ω	0Ω	.1Ω	† 870Ω	† 6000Ω	1Ω		
V2	6U8	† 7200Ω	1meg	† 6000Ω	.1Ω	.2Ω	† 1400Ω	0Ω	1Ω	6800Ω
V3	6AB4	† 400Ω	TP	0Ω	.1Ω	NC	470K ▲ INF	270Ω		
V4	6BA6	1.3meg	0Ω	0Ω	.1Ω	† 1400Ω	† 6000Ω	0Ω		
V5	6AU6	100K	0Ω	0Ω	.1Ω	† 1400Ω	† 6000Ω	0Ω		
V6	6AL5	1meg	1meg	0Ω	.1Ω	10K	0Ω	10K		
V7	6DA5 EM81	1.4meg	1400Ω	† 400Ω	0Ω	.1Ω	NC	† 220K	TP	† 400Ω
V8	12AU7A	† 45K	0Ω	1500Ω	.1Ω	.1Ω	† 6000Ω	480K	10K	0Ω
V9	6X4	80Ω	NC	0Ω	.1Ω	NC	85Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 7 OF V9.
■ MEASURED FROM PIN 8 OF V8.
▲ MEASURED IN "FM-AFC" POSITION.

PILOT
MODEL FM-530

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

IF ALIGNMENT, USING AM SIGNAL GENERATOR & VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	200mmf	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis	A1, A2, A3, A4, A5	Adjust for maximum deflection.
2.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR & OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	200mmf	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis	10.7MC (450KC SWP)	FM	Point of non-interference	Vert. Amp to point Ⓐ. Low side to chassis	A1, A2, A3, A4, A5	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	"	Vert. Amp to point Ⓑ. Low side to chassis	A6	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2 SLIGHTLY retouch A1 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	270Ω Carbon Resistor	High side to FM antenna terminal D1. Low side to FM antenna terminal D2.	90MC (Unmod.)	FM	90MC	DC probe to point Ⓐ. Common to chassis	A7	Adjust for maximum deflection.
4.	"	"	106MC	"	106MC	"	A8	Adjust for maximum deflection. Repeat Steps 3 & 4.
5.	"	"	90MC	"	Tune for 90MC signal	"	A9	Adjust for maximum deflection.
6.	"	"	106MC	"	Tune for 106MC signal	"	A10, A11	"
7.	"	"	100MC	"	Tune for 100MC signal	"	A12	"

FIG. 1

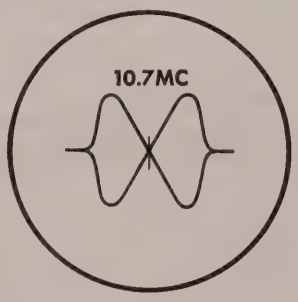


FIG. 2

CHASSIS STAMP	ALIGN #	CHASSIS STAMP	ALIGN #	CHASSIS STAMP	ALIGN #	CHASSIS STAMP	ALIGN #
S1	A5	S5	A1	T2	A8	P3	A12
S2	A4	S6	A6	T3	A10		
S3	A3	S7	R2	P1	A7		
S4	A2	T1	A11	P2	A9		

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BA6	
V2	Mixer - Osc.	6U8	
V3	AFC	6AB4	
V4	1st IF Amplifier	6BA6	
V5	2nd IF Amplifier	6AU6	

ITEM No.	USE	TYPE	NOTES
V6	Ratio Detector	6AL5	
V7	Tuning Indicator	6DA5/ EM81	
V8	AF Amp. -Cath. Follower	12AU7A	
V9	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PILOT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	300	24-123	AFH3-25-50	C0194	FP375.5	TMT-23	T-108	TVL-3561.5
B	■80	250					TD-40-350	MT-4540	
C	▲40	250							
C2	2	50	24-82	PRS50V2	BBR2-50	TT150X2	TD-2-50	MT-0502	TVA-1301

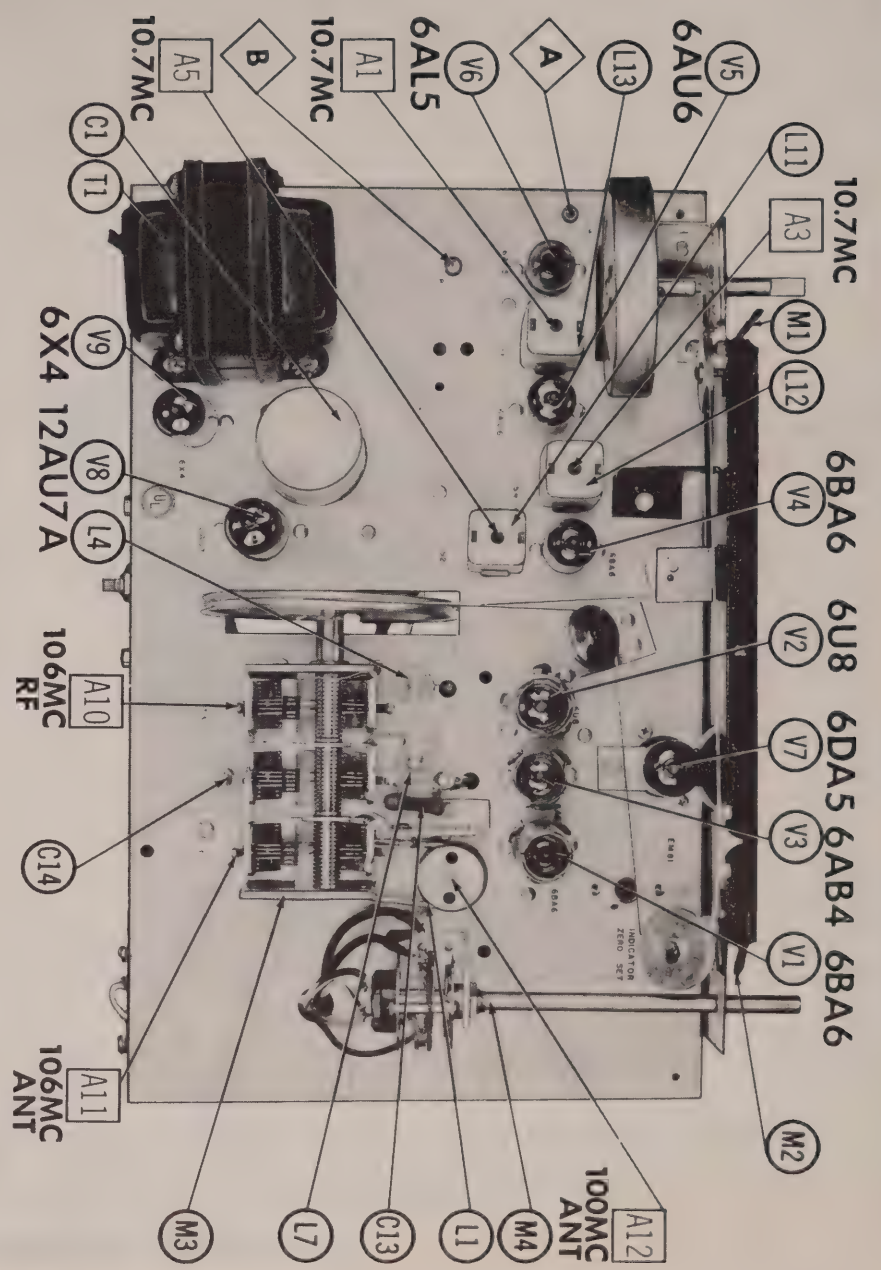
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	PILOT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	30	2000			DD30-300			20GAB-Q3	
C4	50				TCN-50	C10Q5U			N750 10%
C5	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C6	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C7	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	50				TCN-50	C10Q5U			N750 ① 10%
C9	50				TCN-50	C10Q5U			N750 10%
C10	50				TCN-50	C10Q5U			N750 10%
C11	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C13	100			NPO-SI100	TCZ-100	CTA6T1C	ZT-531	5TCC-T1	NPO
C14	1-7.5								
C15	22			N750-DI22	DTN-22	C10Q22U		5TCU-Q22	N750 10%
C16	800			BPD-0008	DD-801	L10T8		5GA-T8	
C17	5			NPO-DI5	TCZ-4R7	C10V5C	ZT-555	5TCCB-V5	NPO
C18	100			NPO-DI100	DTZ-100	C10T1C	ZT-531	5TCC-T1	NPO
C19	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C20	1.2								
C21	10								N1500 10%
C22	500				D6-501	5R5T5	MEB245	MS-35	10%
C23	800			BPD-0008	DD-801	L10T8		5GA-T8	
C24	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C25	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C26	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C27	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C28	500			BPD-0005	DD-501	L10T5	UC-535	5GA-T5	
C29	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C30	10000			BPD-01	DD-103	BYA6S1	DC511	DC511	
C31	500				D6-501	5R5T5	MCB245	MS-35	10%
C32	1500					1R5D15	MCB456	MS-215	10%
C33	100				D6-101	L10T1	MCB230	MS-31	10%
C34	100				D6-101	L10T1	MCB230	MS-31	10%
C35	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C36	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C37	100				DD-101	L10T1	MCB230	MS-31	10%
C38	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C39	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C40	.01	600		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	

① Some versions may use 33mmf in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PILOT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	39-41	ABT-74	A47F5-1meg	Q19-137X	UT-443	Level Set, Tap @ 650K
B	Shaft			AK-1	FKS-1/4	Not Req.	Not Req.	
R2A	5000Ω	½	39-42	AB-10	B47-5000-S	Q11-114	TA53L	Indicator Zero Set
B	Shaft			AK-1	Not Req.	RQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PILOT PART No.	NOTES
	OHMS	WATT		
R3	270Ω			
R4	270K			
R5	5600Ω			
R6	470Ω			
R7	1meg			
R8	5600Ω			
R9	1000Ω			
R10	6800Ω			
R11	6800Ω			
R12	68Ω			
R13	470K			
R14	270Ω			
R15	27K	1		
R16	270K			
R17	5600Ω			
R18	1000Ω			
R19	100K			
R20	1meg			
R21	5600Ω			

ITEM No.	RATING		PILOT PART No.	NOTES
	OHMS	WATT		
R22	1000Ω			
R23	39K			
R24	10K 5%			
R25	10K 5%			
R26	68K			Note 1
R27	2200Ω			
R28	68K			Note 1
R29	470K			
R30	220K			
R31	68K	1		
R32	470K			
R33	1meg			
R34	39K			
R35	1500Ω	1		
R36	5600Ω			
R37	470K			
R38	470Ω			
R39	10K			
R40	400Ω	4		

Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PILOT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	70-81					
L2	Cathode Choke	75-33	19-1004	SW-631	4529		
L3	RF Choke	75-33	19-1004	SW-631	4529		
L4	RF Coil	71-44					
L5	Fil. Choke	75-19	19-1001	BC-562	4604		
L6	RF Choke	75-33	19-1004	SW-631	4529		
L7	Osc. Coil	72-79					
L8	Cathode Choke	75-33	19-1004	SW-631	4529		
L9	Fil. Choke	75-19	19-1001	BC-562	4604		
L10	Fil. Choke	75-19	19-1001	BC-562	4604		
L11	1st IF	273-151	16-3487	FM-254	1463		
L12	2nd IF	273-151	16-3487	FM-254	1463		
L13	Ratio Detector	279-72	17-3498	FM-255	1465		
L14	Line Choke	75-19	19-1001	BC-562	4604		
L15	Line Choke	75-19	19-1001	BC-562	4604		

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	PILOT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .37A	300 VCT @ .060A	6.3V @ 3A	55-39						

MISCELLANEOUS

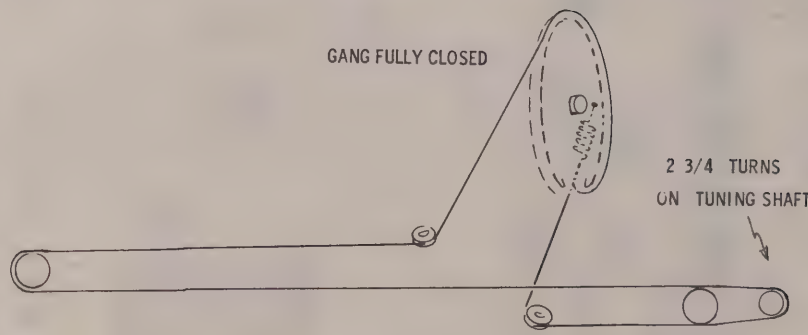
ITEM No.	PART NAME	PILOT PART No.	NOTES
M1	Lamp	68-10	#1847
M2	Lamp	68-10	#1847
M3	Tuning Cap.	26-61	3 Gang
M4	Switch		Power On-Off, Selector (Rotary, Wafer Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

DIAL CORD STRINGING

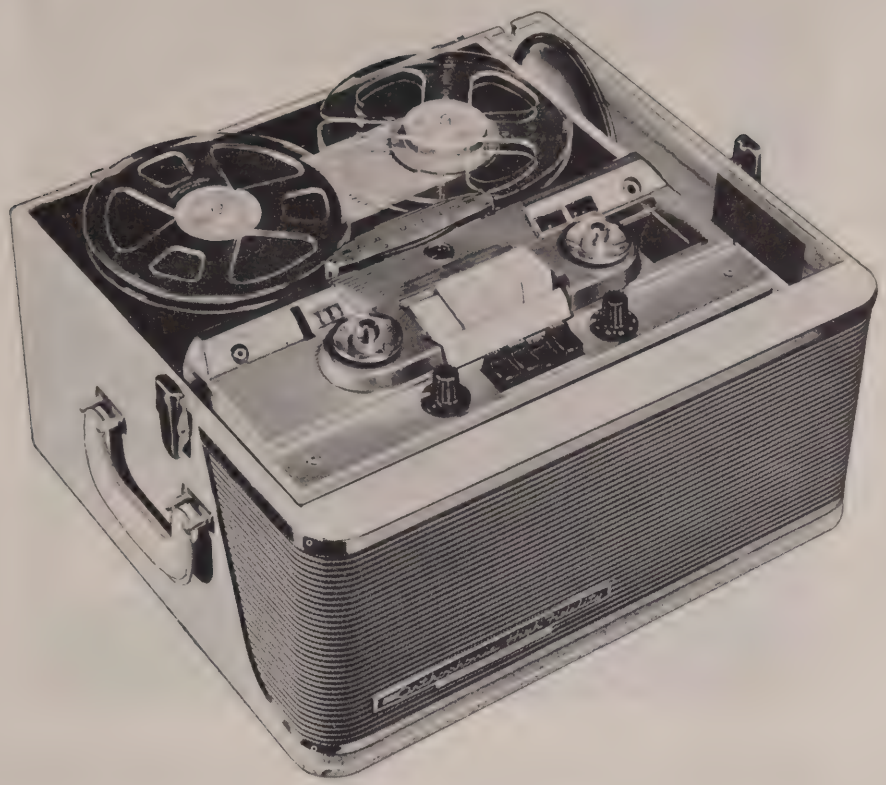


PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

RCA VICTOR MODELS SS-6, SS-8, STR-6, STR-8 (Ch. RS-166, RS-167)

RCA VICTOR MODELS SS-6, SS-8, STR-6, STR-8 (Ch. RS-166, RS-167)



RCA VICTOR MODELS SS-6, SS-8, STR-6, STR-8 (Ch. RS-166, RS-167)

GENERAL INFORMATION

The RCA Models STR-6 and STR-8 tape recorders reproduce stereophonic sound from prerecorded stereophonic tapes. Conventional tapes (either half-track or full track) may also be used. In addition, the recorder will make monaural recordings.

The amplifier has two channels, each channel having four stages of playback amplification. Switching in the third stage permits full power output with either stereophonic or conventional tapes.

Tape motion is controlled by three push buttons and a Stop bar. A fourth push button (Monitor) actuates the record-playback switches only. When this fourth push button is depressed, the recording level may be set before the tape is set into motion.

These recorders operate from a 60-cycle, 115-volt, AC supply only. Before connecting to your line supply, be absolutely certain the supply agrees with the foregoing specifications.

Manufactured by:

Radio Corporation of America
RCA Victor Radio and "Victrola" Division
Camden 8, New Jersey

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

C369

Copyright 1959 • All Rights Reserved

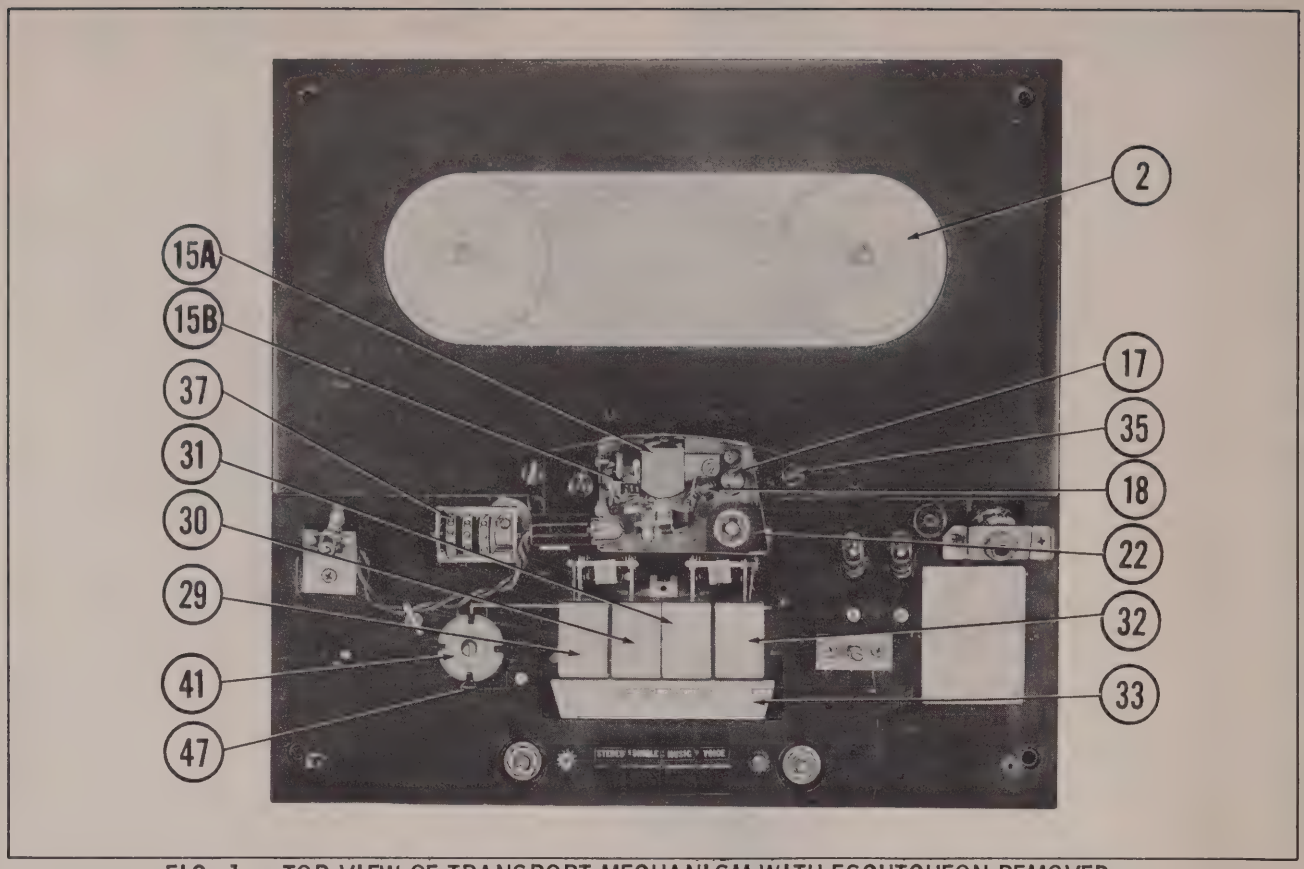


FIG. 1 TOP VIEW OF TRANSPORT MECHANISM WITH ESCUTCHEON REMOVED

SPECIFICATIONS

Tape Used

1/4" stereo (twin-track, in-line) or conventional (half-track or full track)

Tape Speeds

3 3/4 or 7 1/2 ips

Power Supply

115 volts, 60 cycles, 150 watts

Power Output (Each Channel)

Undistorted, 3 watts; maximum, 4.5 watts.

Frequency Response

70 to 15,000 cycles from prerecorded tape

Bias and Oscillator Frequency

60 kc ± 5 kc

OPERATING INSTRUCTIONS

Stereophonic Playback

Stereophonic tape recordings for in-line heads are required. A right-channel speaker system must be connected to Right Channel speaker jack.

1. Turn Stereo-Single/Mark switch to Stereo-Single position.
2. Depress Stereo push button.
3. Depress Play push button.
4. Adjust Loudness and Tone controls.

NOTE: Voice and Music push buttons have no effect during playback and may be set in any position.

Monaural Playback (Half-Track or Full Track)

1. Same as "Stereophonic Playback" except Step 2. In Step 2, depress Single instead of Stereo push button.

Monaural Recording from Microphone or Radio-Phono Jack

1. The Radio-Phono jack of Models STR-6 and STR-8 can be used for monaural playback or recording when connected to the output of an amplifier.

2. Turn Stereo-Single/ Mark switch to Stereo-Single position.

3. Depress Voice or Music push button, depending on the type of material being recorded.

4. Depress Monitor push button and set recording level. Recording level indication is given by two neon bulbs. Adjust the recording level indicators by rotating the Loudness control. For proper adjustment, the Normal indicator just flashes. When the Loudness control is advanced too far, the Overload indicator will flash, and the recording will be distorted.

To prevent overload, lower the Loudness control until the Overload indicator does not flash.

5. Hold down the Monitor push button and at the same time depress the Play push button.

NOTE: Single and Stereo push buttons, and Tone control have no effect during recording and may be set in any position.

Public Address Recording

These recorders can be used with a public address system in the following manner:

1. Insert microphone output plug into Microphone jack.

2. Insert high-impedance input of public address amplifier into Radio-Phono jack.

3. Turn Stereo-Single/ Mark switch to Stereo-Single position.

4. Depress Monitor push button and adjust recording level.

5. Depress Voice or Music push button, as desired.

6. To start recording, hold down the Monitor push button and at the same time depress the Play push button.

High-Speed Forward or Rewind Push Button

1. To rapidly advance the tape, depress the push button with the arrow pointing to the right. This push button is the High Speed Forward control.

2. To rapidly reverse the tape, depress the push button with the arrow pointing to the left. This push button is the High Speed Rewind control.

Stop Bar

1. This control stops the tape motion. Always depress the Stop bar before depressing any push button.

2. The Stop bar should be depressed before turning the Power-Speed control.

Tape Counter

Tape counter (37) provides complete selectivity and immediate location of any part of a recorded tape. By turning the counter to zero before beginning each reel, the numerals on the counter will serve as a ready reference to any portion of the recorded tape.

To Erase Tape

When the Monitor and Play push buttons are depressed, the erase head is automatically positioned, erasing any previous recordings while a new one is being made. Material no longer needed may be erased, without recording, by depressing the Monitor and Play push buttons and turning the Loudness control to its minimum position. One track is erased at a time. To erase the second track, reverse the reels and repeat the foregoing procedure.

Power-Speed Control

This control turns on the recorder and at the same time selects the desired recording or playing speed.

DISASSEMBLY INSTRUCTIONS

To Remove Tubes

Model STR-6: Remove cabinet bottom and leg assembly from cabinet by removing eleven wood screws.

Model STR-8: Remove plate (screen) from bottom of cabinet by removing six wood screws.

To Remove Tape Transport Mechanism from Cabinet

1. Remove screen or cabinet bottom as described in "To Remove Tubes."

2. Disconnect speaker leads.

3. Remove control knobs.

4. Remove four screws holding escutcheon and lift off escutcheon.

5. Remove microphone housing (8), secured by two screws.

6. Remove four mounting screws at corners of motorboard (12).

7. Remove power cord by removing clamp at rear of storage compartment. Push power cord through hole in cabinet.

8. Grip tape transport mechanism with fingers at opening in motorboard (12) and lift.

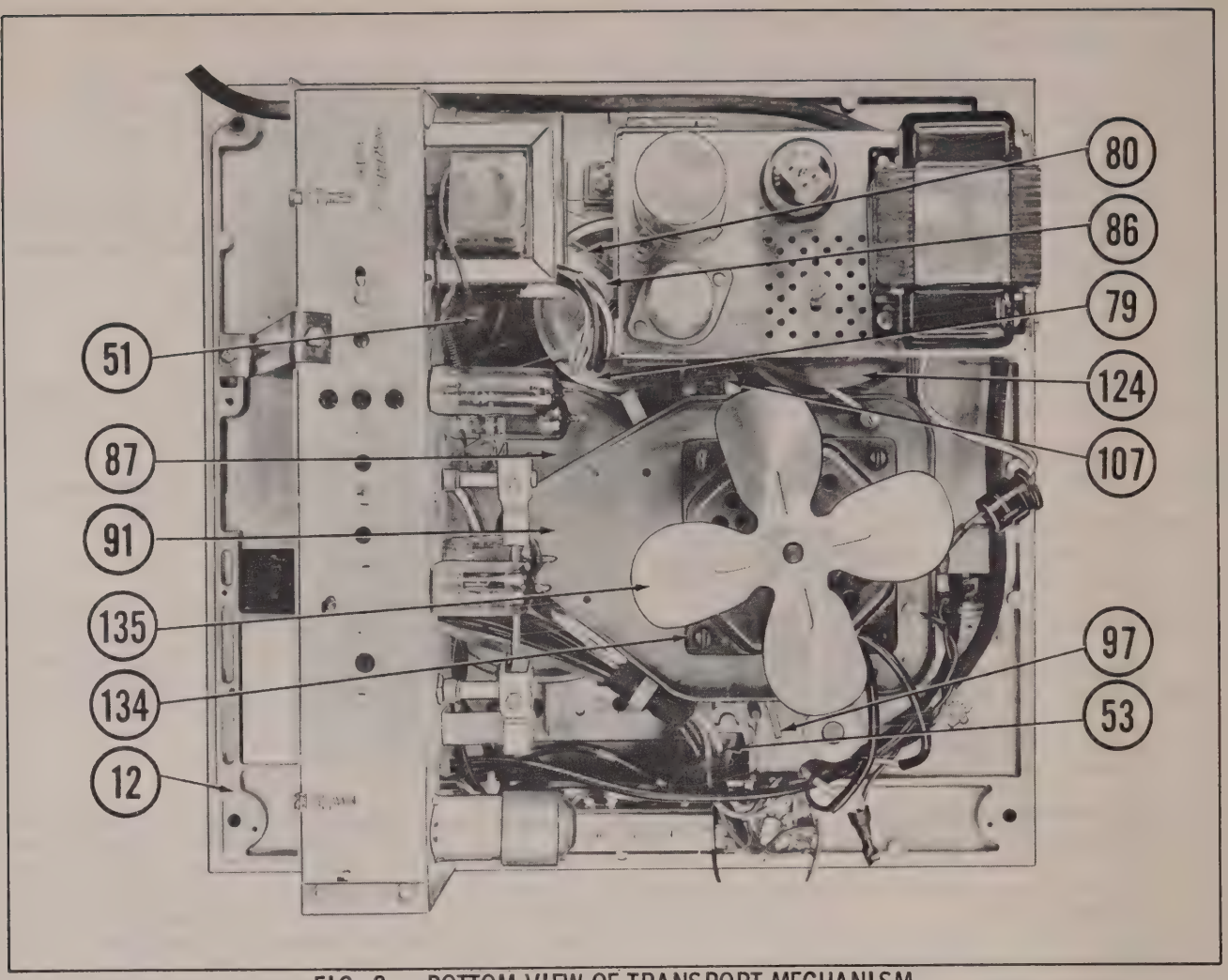


FIG. 2 BOTTOM VIEW OF TRANSPORT MECHANISM

To Remove Amplifier Chassis from Tape Transport Mechanism

1. Remove tape transport mechanism, as described in "To Remove Tape Transport Mechanism from Cabinet."
2. Remove pilot lamp socket from its mounting bracket.
3. Disconnect playback and erase head connectors, and power socket.
4. Remove two screws holding radio/phono input jack to motorboard. Push bracket through hole in motorboard.
5. Remove hex nut holding microphone input jack to bracket on motorboard.
6. Remove screws holding amplifier chassis to motorboard.

MECHANICAL ADJUSTMENTS

Brake Arms

Right-hand brake arm (65) and left-hand brake arm (98) should engage their drive pulleys (51) and (124) with the same force and at the same time. The brake pads should contact the pulleys with the maximum pad area. This is accomplished by bending the end of brake release slide (67). To gain access to the end of brake release slide (67), remove main drive pulley (79).

Tape Pressure Roller

Tape pressure roller (22) and capstan shaft (17) control the pressure on the tape. This pressure is derived mainly from pressure roller arm formed spring (57) on tape pressure roller arm (48). One of the mounting holes on pressure roller arm formed spring (57) is slotted to permit adjustment. The spring tension is determined by measuring the force necessary to pull the tape past capstan shaft (17). With the recorder stopped and Play push button depressed, a tension of 32 ounces should be required to cause tape slippage. Too much pressure will make the latch difficult to depress in the Play position.

Erase head (15B) should be so positioned that its face is parallel with the holes in mounting bracket (15C) and parallel to the tape. The vertical height of the head should be 0.584", measured from the mounting bracket to the top of the erase head gap. If the head is too high, the recording may not be erased completely; if the head is too low, part of the lower track may be erased.

Record-Playback Head

1. Thread a standard frequency tape (RCA 12-5-61T or equivalent) on the tape recorder. Connect output meter across left-channel speaker lead terminals.

2. Record-playback head (15A) should be so positioned that the front of the head is parallel to the edge of mounting bracket (15C).

3. Adjust right-hand tape guide post (18) for maximum output while playing the 1,000-cycle portion of the tape. Adjust left-hand tape guide post (18) so that the tape is approximately level across front of head. Repeat right-hand tape guide post (18) adjustment.

4. Adjust right-hand head mounting screw (15R) for maximum output. Left-hand head mounting screw (15L) must be tight.

Recording Level Indicator

Recording level settings are obtained by two neon bulbs, Type NE-51. Adjustment of these bulbs are necessary only when the bulbs or components in these circuits are replaced. The firing level on the recording indicator is adjusted by means of two adjustable controls (R3) and (R4). The controls are accessible after the cabinet bottom cover is removed.

To adjust firing level of recording indicators, the mechanism must be in the cabinet. Refer to Fig. 3 for location of adjustments.

1. Connect an audio signal generator to the radio-Phono jack. Set generator frequency to approximately 1,000 cycles.

2. Connect a VTVM to test point TP-3.

3. Depress Monitor push button.

4. Ground test point TP-1. Adjust generator output and/or tape recorder Loudness control to provide approximately 2.3 volts rms reading on the VTVM.

5. Remove ground from test point TP-1 and adjust Normal indicator control (R4) by turning counterclockwise and then clockwise until the Normal neon bulb barely lights.

6. Ground test point TP-1. Adjust generator output and/or tape recorder Loudness control to provide approximately 6.8 volts rms reading on the VTVM.

7. Remove ground from test point TP-1 and adjust Overload indicator control (R3) by turning counterclockwise and then clockwise until the Overload neon bulb barely lights.

Gain Control

Gain control (R5) enables the volume level of the external speakers to be equalized with the volume level of the internal speakers.

To set the gain control:

1. Thread a standard frequency tape on the recorder.

2. Connect an output meter across the terminals of the left channel speaker contained in the recorder.

3. Turn on recorder and allow to warm up for several minutes. Set volume control at normal playing position. Set switch (M9) to Stereo-Single.

4. Depress the Stereo and Play push buttons and, while playing the 1,000-cycle part of the tape, note the output meter reading.

5. Depress Stop bar and reverse tape reels to turn tape upside down.

6. Disconnect the output meter from the recorder and connect to the terminal of right channel speaker contained in the companion speaker unit.

7. Depress the Stereo and Play push buttons and, while playing the 1,000-cycle part of the tape, note the output meter reading.

8. Adjust gain control (R5) to obtain the same indication on the output meter as was noted in Step 7. For location of gain control, refer to Fig. 3.

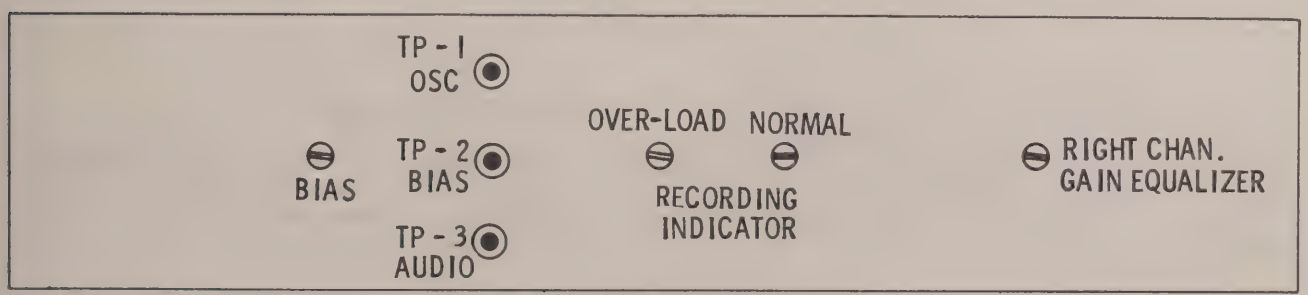


FIG. 3 AMPLIFIER ADJUSTMENTS

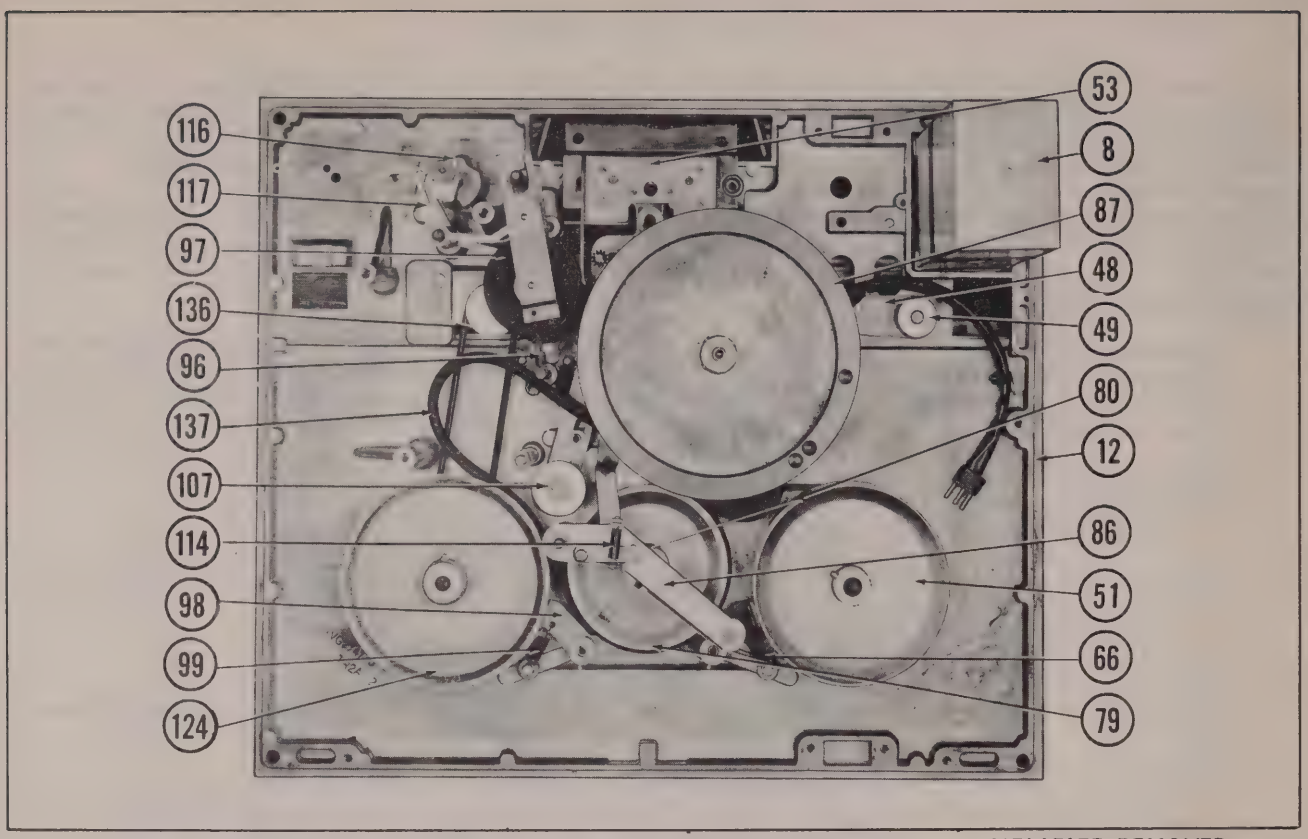


FIG. 4 BOTTOM VIEW OF TRANSPORT MECHANISM WITH MOTOR AND AMPLIFIER REMOVED

Recording Bias Voltage

Recording bias is obtained from the oscillator circuit of V4 and L1 and applied to the recording signal at the head input. The recording bias level requires adjustment only when a component in the oscillator head circuit is replaced or if C27 adjustment is altered.

To adjust recording bias level, the recorder must be in the cabinet. For location of adjustments, refer to Fig. 3.

1. Depress Monitor push button and allow recorder to warm up.
2. Connect a calibrated oscilloscope from test point TP-2 to chassis ground.

NOTE: Use a low-capacity probe with the oscilloscope in order to minimize circuit loading.

3. Adjust C27 for an indication of 195 volts peak-to-peak on the oscilloscope.

NOTE: The bias signal is 60 kc and cannot be accurately measured with an audio output meter.

Oscillator Frequency and Output Level

The oscillator frequency is 60 kc ± 5 kc and is obtained by adjusting oscillator coil L1.

The oscillator output is used for both the recording bias and erase voltage. To adjust recording bias level, see "Recording Bias Voltage." Erase voltage requires no adjustment, but should be greater than 500 volts peak-to-peak as measured at the junction C27 and C31 with a calibrated oscilloscope.

NOTE: A low-capacity probe must be used with the oscilloscope in order to minimize circuit loading.

CLEANING

The head, capstan, and pressure roller may accumulate tape coating, worn off as the tape passes these parts. Clean the head surfaces, capstan, and pressure roller with a soft cloth. Never clean the recording head with a brush, as this could mar the lamination.

Occasionally clean any foreign matter from under the plastic escutcheon.

The rubber-tired idler wheels and pressure roller must be kept free of oil or grease. To clean oil or grease from rubber parts, use a soft cloth and alcohol or carbon tetrachloride.

Be careful to prevent cleaning fluids from removing the lubricant from Oilite bearings.

LUBRICATION

All rotating parts are provided with generous size Oilite bearings, which are factory lubricated and normally require no further attention. However, should lubrication be required, use sewing machine oil sparingly.

Other bearings should be lubricated with Staput #320.

Sliding surfaces should be lubricated with Cosmolube #1.

TROUBLE CHART

Symptom	Cause	Remedy
Push buttons fail to latch into position.	1. Push button latch tension spring (92) broken or loose.	1. Replace push button latch tension spring (92).
Tape breaks.	1. Brakes improperly adjusted.	1. See "Brake Arms Adjustment" under "Mechanical Adjustment."
Excessive mechanical noise while idling.	1. Take-up belt tension roller (84) touches take-up drive pulley (51).	1. Adjust position of take-up arm stop (111) to provide clearance.
No drive on take-up reel.	1. Take-up drive belt (80) broken.	1. Replace take-up drive belt (80).
	2. Take-up arm spring (114) loose.	2. Hook take-up arm spring (114) back into position.
	3. Bearing of right-hand reel hub shaft (2) binds.	3. Wipe foreign matter from bearing surface and shaft with a clean cloth. Lubricate with one drop of #10 motor oil.
	4. Bearing of take-up arm assembly (86) or take-up belt tension roller (84) binds.	4. Wipe foreign matter from bearing surface and shaft with clean cloth. Lubricate with one drop of #10 motor oil.
Tape overruns or spills when Stop bar is depressed during fast forward or rewind.	1. Brakes not adjusted properly.	1. See "Brake Arms Adjustment" under "Mechanical Adjustments."
	2. Brake pad worn out.	2. Replace brake pad.
	3. Unequal tension of brake arm springs (99) and (66).	3. Replace brake arm springs (99) and (66).
Play push button does not depress.	1. Interlock bar tension spring (10) loose.	1. Refasten interlock bar tension spring (10).
On-Off/ Speed Change control does not turn.	1. Interlock bar tension spring (10) loose.	1. Refasten interlock bar tension spring (10).
	2. Interlock bar (9) bent and remains engaged with interlock detent collar (41).	2. Re-form interlock bar (9).
	3. Defective On-Off switch M13.	3. Replace On-Off switch M13.
No fast forward or rewind.	1. Rewind slide return spring (102) or fast forward slide return spring (148) loose or broken.	1. Replace rewind slide return spring (102) or fast forward slide return spring (148).
	2. Fast forward drive roller (77) or rewind drive roller (107) missing.	2. Replace fast forward drive roller (77) or rewind drive roller (107).

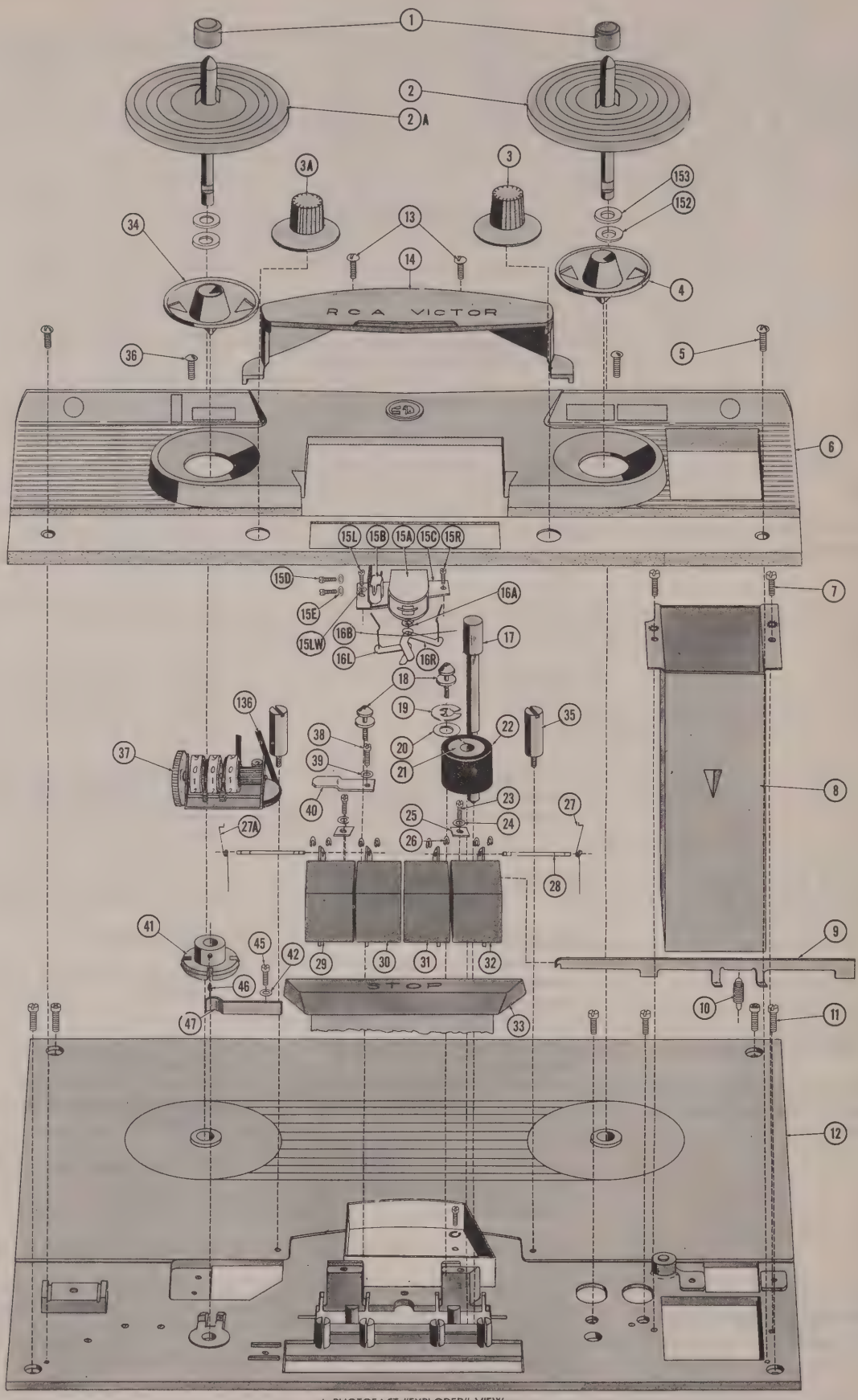


FIG. 5A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

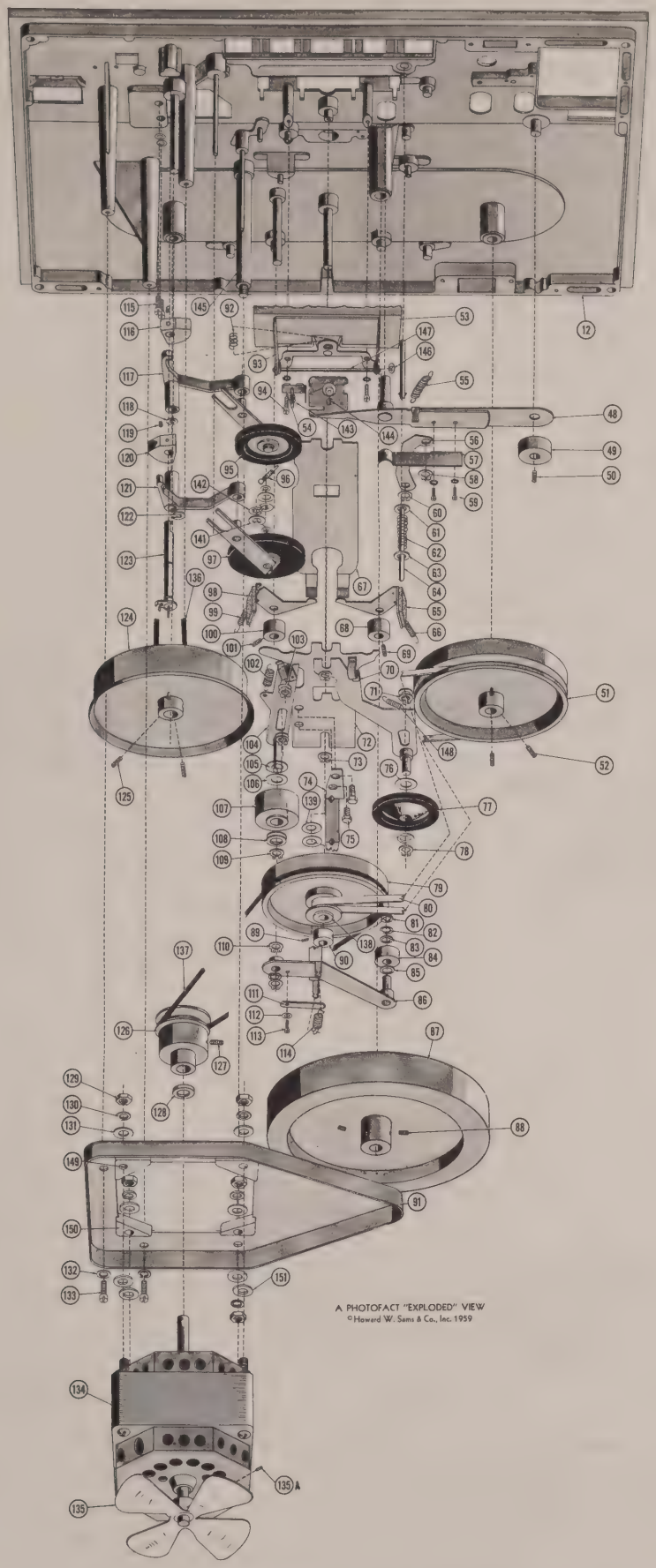
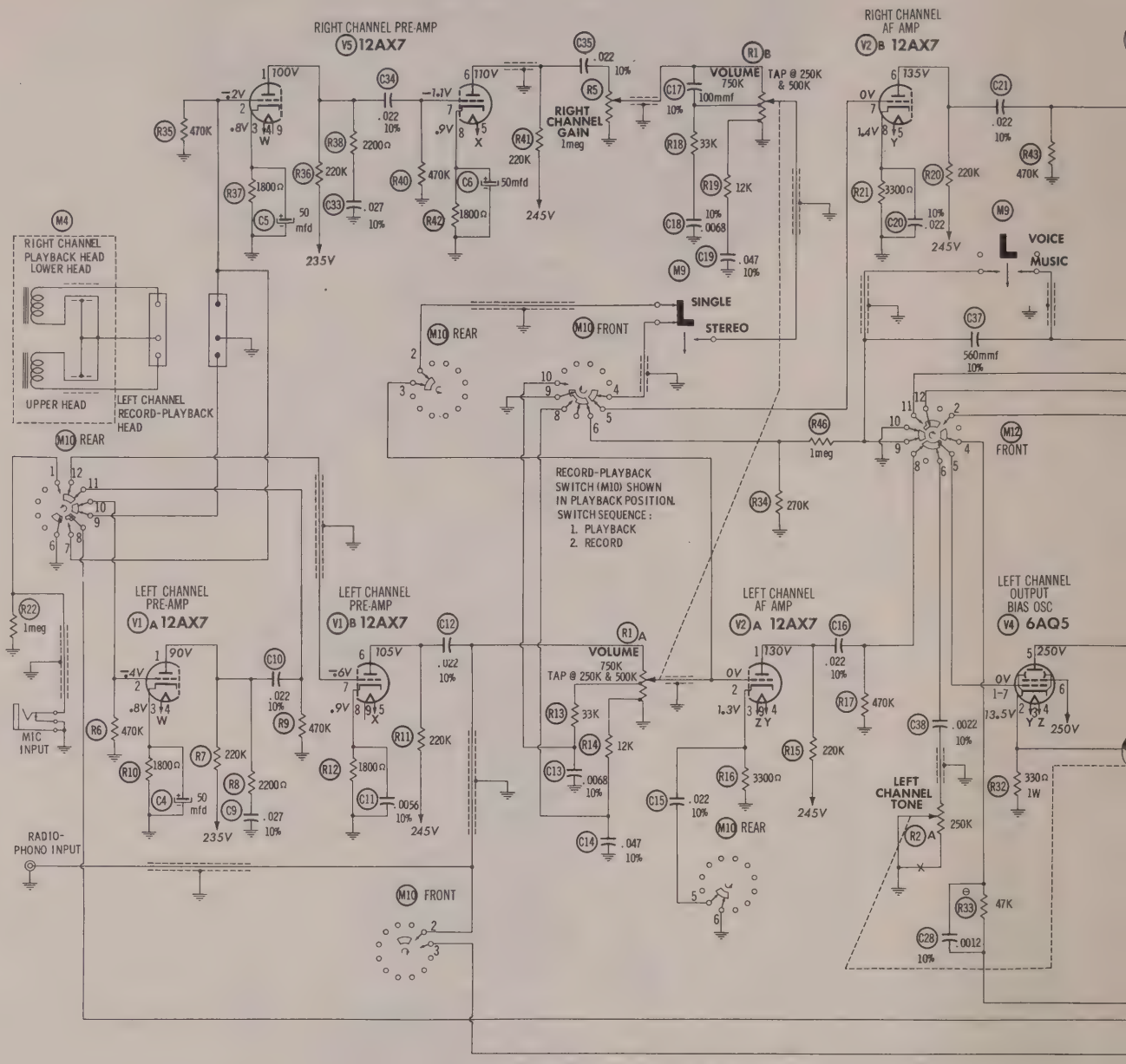


FIG. 5B EXPLODED VIEW OF PARTS BELOW BASEPLATE



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†245K	470K	1800Ω	5.5Ω	0Ω	†220K	470K	1800Ω	NC
V2	12AX7	†220K	0Ω ▪ 1meg	3300Ω	5.5Ω	0Ω	†220K	0Ω ▪ 270K	3300Ω	5.5Ω
V3	12AU7	†220K	470K	12K	.1Ω	.1Ω	†26K	560K	820Ω	.1Ω
V4	6AQ5	470K ▪ 47K	330Ω	.1Ω	.1Ω	†760Ω ▪ 480Ω	†470Ω	470K ▪ 47K		
V5	12AX7	†245K	470K 20Ω	1800Ω	5.5Ω	0Ω	†220K	470K	1800Ω	NC
V6	6AQ5	470K	330Ω	.1Ω	.1Ω	†760Ω	†470Ω	470K		
V7	5Y3GT	NC	¶	TP	86Ω	NC	92Ω	NC	¶	

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 8 OF V7.
▪ MEASURED IN "RECORD" POSITION.
NC NO CONNECTION
TP TIE POINT
● MEASURED IN "RECORD" POSITION

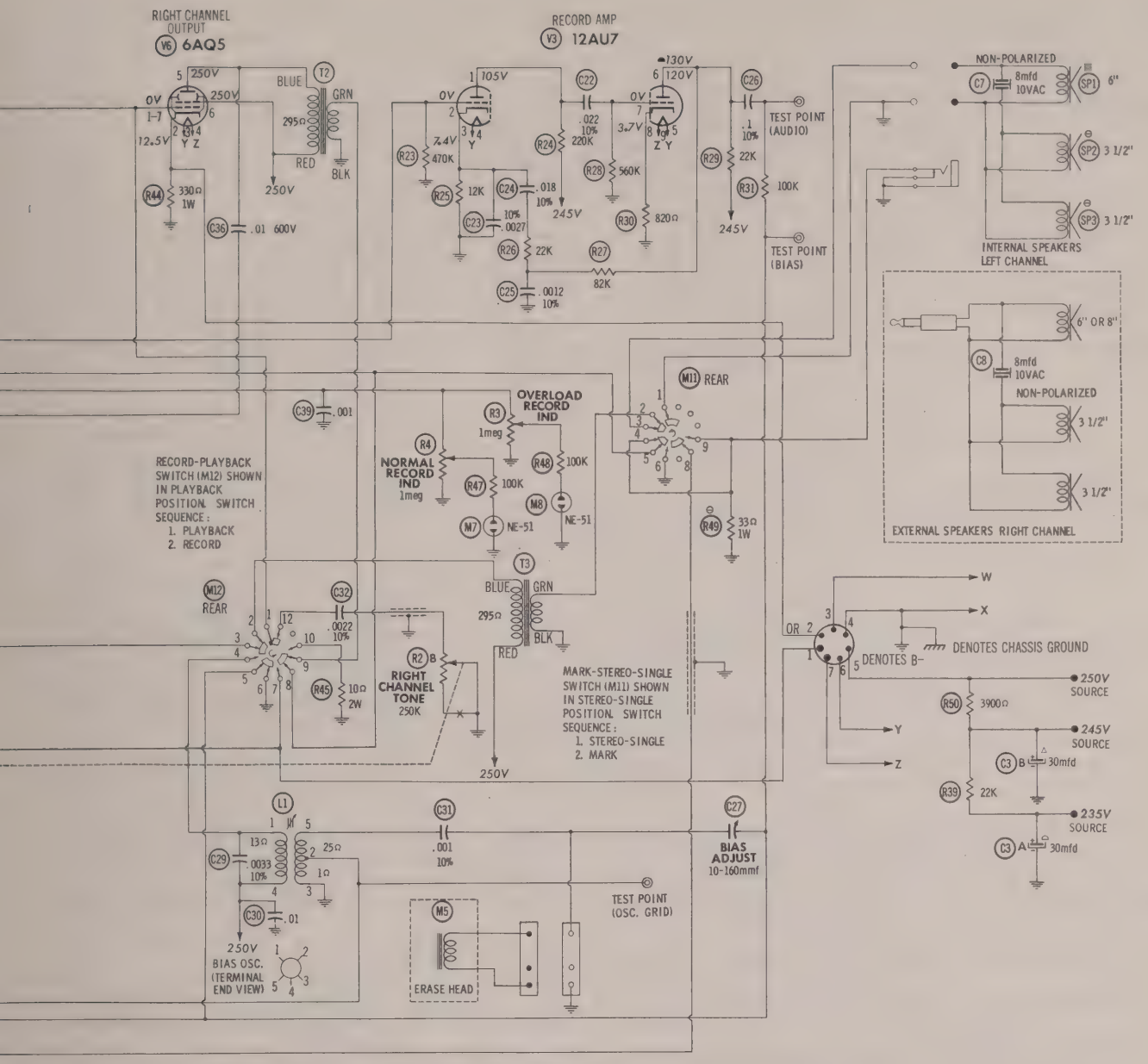
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

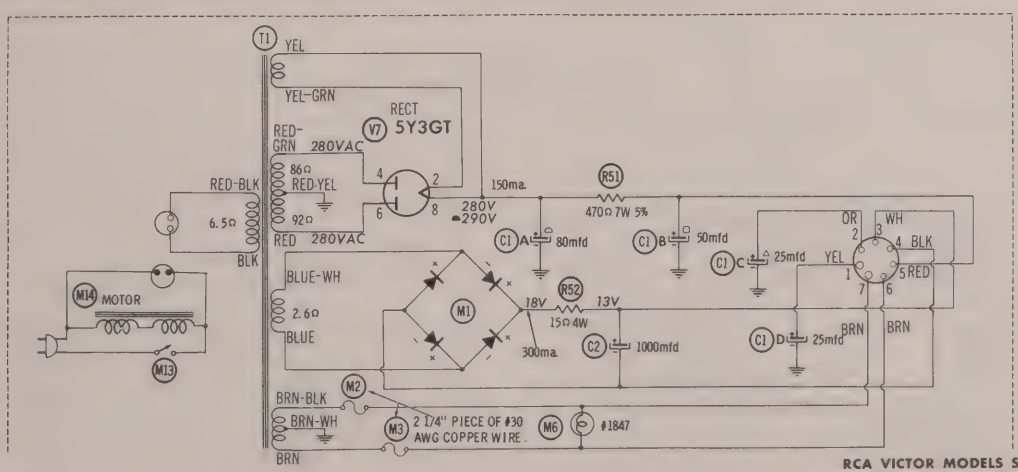
Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1959





RCA VICTOR MODELS SS-6, SS-8, STR-6, STR-8 (Ch. RS-166, RS-167)

TROUBLE CHART (Con't)

Symptom	Cause	Remedy
Speed variation, or wow.	1. Oil or foreign matter on capstan shaft (17), tape pressure roller (22), speed change idler wheels (95) and (97), main drive pulley (79), and main drive belt (137).	1. Clean contact surfaces with cleaning fluid.
	2. Setscrew in motor drive pulley (126) and capstan drive flywheel (87) loose.	2. Tighten setscrew.
	3. Pressure roller arm formed spring (57) loose or broken .	3. Replace pressure roller arm formed spring (57).
	4. Insufficient tape pressure roller pressure on capstan shaft (17).	4. See "Pressure Roller Adjust- under "Mechanical Adjustments."
Fails to record or play.	1. Tape pressure pad (54) fails to hold tape against heads due to missing return spring (143).	1. Replace return spring (143).
	2. Right-hand tape guide post (18) improperly positioned .	2. See "Record-Playback Head Adjustment" under "Electrical Adjustments."
	3. Open circuit in head or connecting cable.	3. If head and connecting cable are open, replace.
	4. Defect in amplifier circuit.	4. Check amplifier circuit for faulty components.
	5. Record actuating rod (64) missing.	5. Replace Record actuating rod (64).
Fails to erase.	1. Open coil in erase head (15B).	1. Replace erase head (15B).
	2. Defective oscillator tube.	2. Replace oscillator tube.
	3. Defect in oscillator circuit.	3. Check oscillator circuit for faulty components.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	76787	Retainer, Tape Reel Retainer (Rubber)
2	105409	Shaft, Right-Hand Reel Hub And Shaft Ass'y.
2A	105410	Shaft, Left-Hand Reel Hub And Shaft Ass'y.
3	105584	Knob, Tone Control Knob (Brown)
3A	105585	Knob, Mark/Stereo-Single Control Knob (Brown)
4	105608	Knob, Loudness Control Knob (Suntan Gold
5		Screw, #6-32 x 3/4" Fil. Hd.
6	105591	Escutcheon, Front Control Panel Escutcheon
7		Screw, #6-32 x 3/16" Binding Head
8	101707	Microphone Housing
9	101483	Interlock, Fast Forward or Rewind Interlock Bar
10	101514	Spring, Interlock Bar Tension Spring
11		Mounting Screws (4)
12	105612	Motorboard, Motorboard Subassembly
13		Screw, #8-32 x 1/2" Long
14	105589	Escutcheon, Record-Play-Erase Head Escutcheon
15A	103277	Head, Record-Play Head With Male Connector
15B	105362	Head, Erase Head With Male Connector

Ref. No.	Part No.	Description
15C	105505	Bracket, Mounting Bracket For Record-Play Head And Erase Head
15D		Screw, #2-56 x 1/8" Round Head
15E		Washer, #2 Internal Tooth Lockwasher
15L		Screw, #6-32 x 1/4" Fillister Head
15R		Screw, #6-32 x 5/16" Fillister Head
15LW		Washer, #6 Split Lockwasher
15RW		Washer, #6 Flat Washer
16A	78651	Washer, "C" Type Retaining Washer
16B	105385	Spring, Formed Spring For Tape Hold-out Lever
16L	105363	Lever, Tape Hold-out Lever (Left Hand)
16R	105364	Lever, Tape Hold-out Lever (Right Hand)
17	101474A	Shaft, Capstan Shaft, For 60 Cycle Operation Only
18	101493	Post, Tape Guide Post, Adjustable (2)
19	103157	Retainer, "C" Washer, Retainer For Tape Pressure Roller
20	101507	Washer, Flat Metal, 1/2" O.D. x 252" I.D. x .010" Thk.
21	101523	Washer, Cambric, .437" O.D. x 255" I.D. x .005" Thk.
22	101475	Roller, Tape Pressure Roller, For 60 Cycle Operation Only
23		Screw, #6-32 x 1/4" Fillister Head
24		Washer, #6 Split Lockwasher
25	101487	Retainer, Push-Button Assembly Shaft Retainer, 3/8" x 13/32" x .0478" Thk.
26	101517	Ring, Grip Ring .118" Free Dia., .025" Thk.
27	103345	Spring, Monitor Button Return Torsion Spring
27A	101744	Spring, Torsion Play Button Return Spring
28	101486	Shaft, Pivot Shaft For Push-Button Ass'y.
29	105592	Button, "Play" Button And Cam Assembly (Antique White)
30	105593	Button, "Rewind" Button And Cam Assembly (Antique White)
31	105594	Button, "Fast Forward" Button And Cam Assembly (Antique White)
32	105595	Button, "Monitor" Button Assembly (Antique White)
33	105611	Bar, Stop Bar, Plastic Bar Only
34	105609	Knob, Speed Selection Control Knob (Suntan Gold)
35	101956	Post, Tape Guide Post, Fixed (2)
36		Screw, #6-32 x 3/8" Long
37	101480	Counter, Tape Counter With Knurled Knob And Pulley
38		Screw, #6-32 x 1/4" Fillister Head
39		Washer, #6 Split Lockwasher
40		Bracket, Pilot Lamp Bracket
41	101481	Collar, Interlock Detent Collar, Die Cast
42		Washer, #6 Split Lockwasher
45		Screw, #6-32 x 3/16" Fillister Head
46	14974	Screw, Set Screw, #8-32 x 3/16" For Interlock Detent Collar
47	101454	Spring, Speed Change Detent Spring
48	105383	Arm, Tape Pressure Roller Arm
49	101448	Collar, Pressure Roller Arm Retaining Collar, Less Set Screw

Ref. No.	Part No.	Description
50	101592	Screw, #8-32 x 1/4" Cup Point Set Screw
51	103271	Pulley, Take-up Drive Pulley
52	101592	Screw, #8-32 x 1/4" lg. Cup Point Set Screw
53	101477	Latch, Push-Button Release Latch And Bar Assembly
54	105384	Pad, Tape Pressure Pad Assembly With Felt Pad
55	103253	Spring, Pressure Roller Arm Return Spring, .218" O.D. x 11/16" Free Length
56	101957	Support, Pressure Roller Arm Support Plate
57	101450	Spring, Pressure Roller Arm Formed Spring
58	101500	Ring, Grip Ring .180" Free Dia., .035" Thk.
59		Screw, #6-32 x 3/16" Fillister Head
60	101500	Ring, Grip Ring, .180" Free Dia., .035" Thk.
61		Washer
62		Spring
63		Washer
64		Rod, Record Actuating Rod
65	101499	Arm, R.H. Brake Arm With Pad
66	101511	Spring, Brake Arm Spring, .218" O.D. x 11/16" Free Length
67	101446A	Slide, Brake Release Slide
68	101767	Collar, Brake Arm Retaining Collar, Less Set Screw
69	101592	Screw, #8-32 x 1/4" Lg. Cup Point Screw
70	105393	Slide, Fast Forward Drive Roller Actuating Slide Ass'y.
71	101500	Ring, Grip Ring, .180" Free Dia., .035" Thk.
72	103341	Slide, Pressure Roller Arm Actuating Slide
73	101500	Ring, Grip Ring, .180" Free Dia., .035" Thk.
74	103346	Bracket, Take-up Spring Mounting Bracket
75		Screw, #6 x 1/4" Hex Hd. Tapping Screw
76	101502	Washer, Phenolic, 1/2" O.D. x .188" I.D. x .010" Thk.
77	101492	Wheel, Fast Forward Drive Roller, Rubber Tired
78	101500	Ring, Grip Ring, .180" Free Dia., .035" Thk.
79	103282	Pulley, Main Drive Dual Pulley Ass'y.
80	103283	Belt, Take-up Drive Belt, Flat Fabric
81	101517	Ring, Grip Ring, .118" Free Dia., .025" Thk.
82	100196	Washer, Flat Washer, .240" O.D. x .130" I.D. x .005" Thk.
83	100198	Washer, Cambric Washer, .240" O.D. x .130" I.D. x .005" Thk.
84	103275	Roller, Take-up Belt Tension Roller
85	100198	Washer, Cambric Washer, .240" O.D. x .130" I.D. x .005" Thk.
86	103276	Arm, Take-up Arm Assembly
87	101476A	Flywheel, Capstan Drive Flywheel
88	101592	Screw, #8-32 x 1/4" Lg. Cup Point Set Screw

MECHANICAL PARTS LIST (Con't)

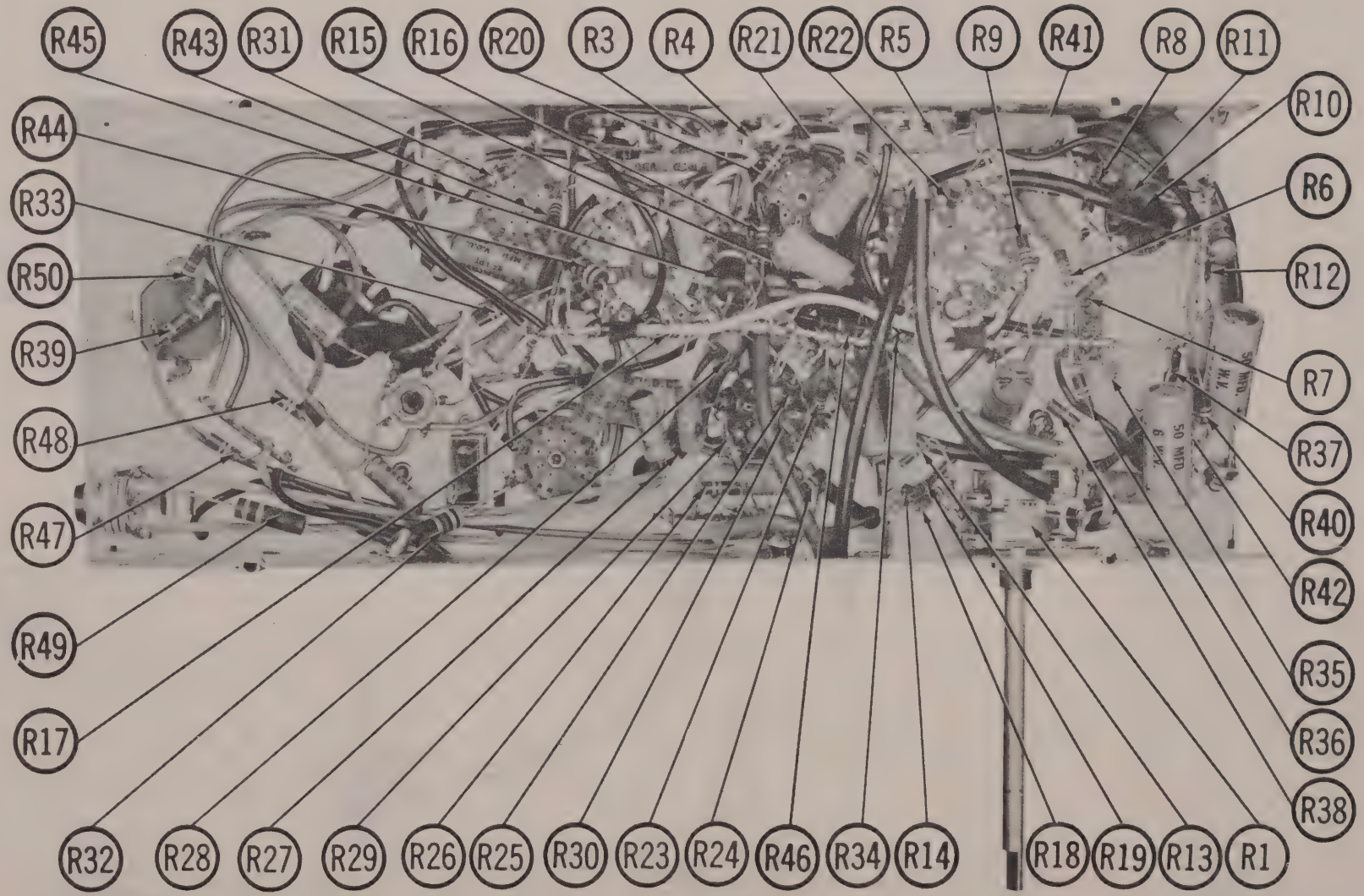
Ref. No.	Part No.	Description
89	70527	Screw, #6-32 x 1/8" Allen Hd. Set Screw
90	105617	Collar, Retaining Collar For Dual Pulley Ass'y.
91	101459	Plate, Motor Mounting Plate And Capstan Shaft Bearing Plate Ass'y.
92	101515	Spring, Push-Button Latch Tension Spring, .343" O.D. x 7/16" Free Length
93	101452	Bracket, Push-Button Latch Mounting Bracket
94		Screw, #6-32 x 1/4" Fillister Head
95	105387	Wheel, Speed Change Idler Wheel (7 1/2 ips)
95A	105366	Arm, 7 1/2 ips Speed Change Arm
96	105391	Spring, Speed Change Arm Return Spring
97	105386	Wheel, Speed Change Idler Wheel (3 3/4 ips)
97A	105367	Arm, 3 3/4 ips Speed Change Arm
98	101497	Arm, L.H. Brake Arm With Pad
99	101511	Spring, BrakeArm Spring, .218" O.D. x 11/16" Free Length
100	101767	Collar, Brake Arm Retaining Collar, Less Set Screw
101	101592	Screw, 8-32 x 1/4" Lg. Cup Point Screw
102	71099	Spring, Rewind Slide Return Spring .187" O.D. x 3/4" Free Length
103	101500	Ring, Grip Ring, .180" Free Dia., .035" Thk.
104	101456	Slide, Rewind Drive Idler Actuating Slide
105	101502	Washer, Phenolic, 1/2" O.D. x .188" I.D. x .010" Thk.
106	74078	Washer, Cambric Washer, .328" O.D. x .195" I.D. x .005" Thk.
107	101467	Roller, Rewind Drive Roller, Die Cast Aluminum
108		Washer
109	101500	Ring, Grip Ring, .180" Free Dia., .035" Thk.
110	101500	Ring, Grip Ring, .180" Free Dia., .035" Thk.
111		Stop, Take-up Arm Stop
112		Washer
113		Screw, Take-up Arm Screw
114	101512	Spring, Take-up ArmSpring, .187" O.D. x 7/8" Free Length
115		Screw, Counter Mounting Screws
116	105338	Cam, Speed Change Cam, Less Set Screw
117	105389	Lever, 7 1/2 ips Change Lever
118	101508	Washer, "C" Ring, .282 O.D. x .114" I.D. x .025" Thk.
119	101592	Screw, #8-32 x 1/4" Cup Point Set Screw
120	105388	Cam, Speed Change Cam, Less Set Screw

Ref. No.	Part No.	Description
121	105390	Lever, 3 3/4 ips Speed Change Lever
122	101508	Washer, "C" Ring, .282" O.D. x .114" I.D. x .025" Thk.
123	105359	Shaft, Speed Change and On-Off Switch Operating Lever Shaft
124	101468	Pulley, Rewind Drive Pulley
125	101592	Screw, #8-32 x 1/4" Lg. Cup Point Set Screw
126	101473A	Pulley, Motor Drive Pulley
127	101592	Screw, #8-32 x 1/4" Lg. Cup Point Set Screw
128		Washer
129		Nut, #10-32 Hex Nut
130		Washer, #10 Split Lockwasher
131		Washer, Flat Metal Washer, 1/2" O.D. x .198" I.D. x 1/32" Thk.
132		Washer, #10 Split Washer
133		Screw, #10-32 x 3/8" Fillister Head
134	105350	Motor, Drive Motor, 115 Volt, 60 Cycle
135	101462	Fan, Motor Fan, Aluminum With #10-32 x 1/4" Set Screw, 5" Diameter For Motor STR-8
	10543	Fan, Motor Fan, Aluminum With #10-32 x 1/4" Set Screw, 5" Diameter For Model STR-8
135A	101589	Screw, #10-32 x 1/4" Allen Head Cup Point Set Screw For Motor Fan
136	101457	Belt, Counter Drive Belt (Rubber)
137	105392	Belt, Main Drive Belt (Rubber)
138	101523	Washer, Cambric, .437" O.D. x 255" I.D. x .010" Thk.
139	101591	Washer, Phenolic, 1/2" O.D. x 250" I.D. x .010" Thk.
141	78719	Washer, Flat Metal .312" O.D. x .190" I.D. x .010" Thk.
142	101508	Washer, "C" Ring (Retainer), .282" O.D. x .114" I.D. x .025" Thk.
143	105370	Spring, Return Spring For Pressure Pad Assembly
144	78651	Washer, "C" Washer Type Retaining Washer For Pressure Pad Assembly
145	101496	Stud, Motor Mounting Stud, 3" Long, #10-32 Thd. Both Ends
146	101517	Ring, Grip Ring, .118" Free Dia., .025" Thk.
147	101516	Shaft, Push-Button Latch Pivot Shaft
148	71099	Spring, Fast Forward Slide Return Spring, .187" O.D. x 3/4" Free Length
149	105358	Spacer, Motor Mounting Spacer
150	103948	Grommet, Motor Mounting Grommet, Rubber (4)
151		Washer, Flat Metal Washer, 1/2" O.D. x .198" I.D. x 1/32" Thk.
152	101591	Washer, Phenolic, 1/2" O.D. x 0.250" I.D. x .010" Thk.
153	101523	Washer, Cambric, .437" O.D. x .255" I.D. x .005 Thk.

RCA VICTOR MODELS SS-6, SS-8, STR-6, STR-8 (Ch. RS-166, RS-167)

AMP CHASSIS - TOP VIEW

Folder 12

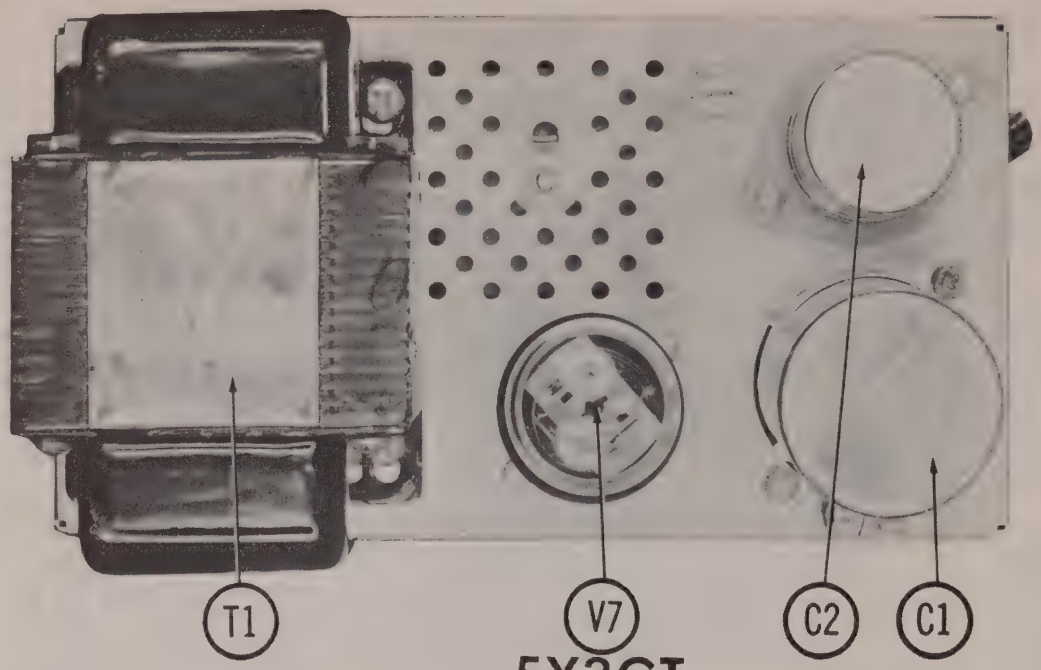


AMP CHASSIS BOTTOM VIEW - RESISTOR IDENT.

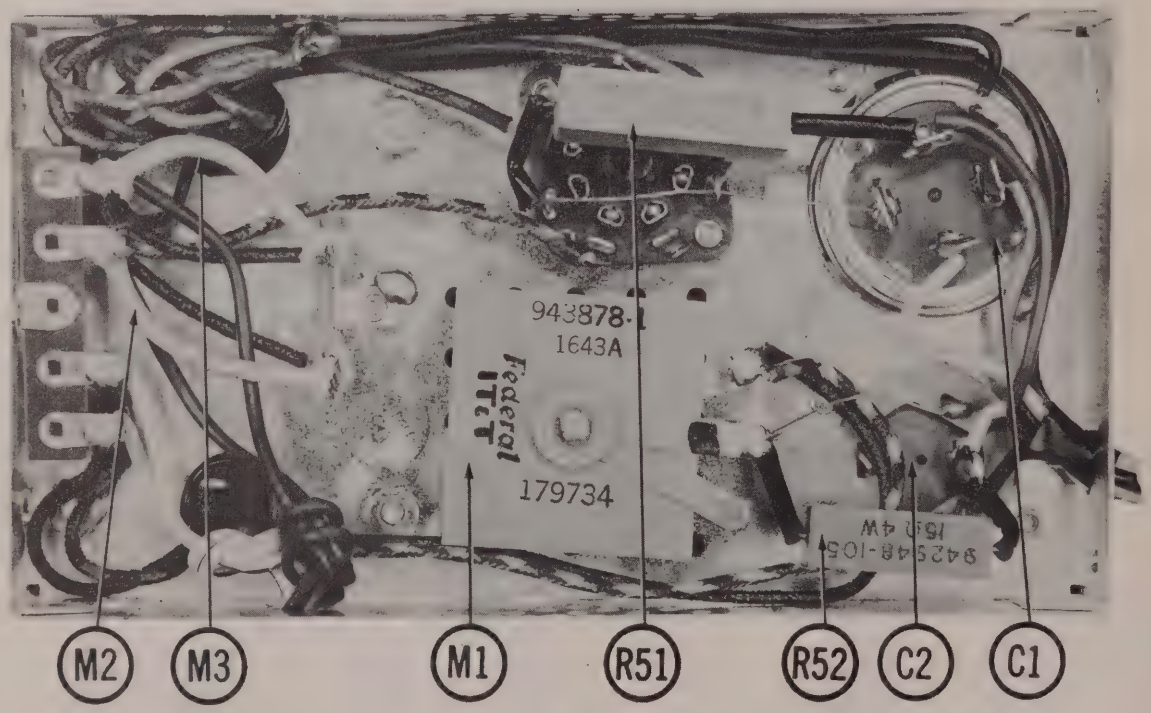
AMP CHASSIS BOTTOM VIEW - CAPACITOR, INDUCTOR & MISC. IDENT.

RCA VICTOR MODELS SS-6, SS-8,
STR-6, STR-8 (Ch. RS-166, RS-167)

Folder 12



POWER CHASSIS - TOP VIEW



POWER CHASSIS - BOTTOM VIEW

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Left Channel Preamp.	12AX7	
V2	AF Amplifier	12AX7	
V3	Record Amplifier	12AU7	
V4	Left Channel Output - Bias Osc.	6AQ5	
V5	Right Channel Preamp.	12AX7	
V6	Right Channel Output	6AQ5	
V7	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲80	400	103259	AFH4-57-50	D0478	FP420.54		D-255	R2438 *
B	■50	400						MTD-0220	
C	▲25	25							
D	25	25							
C2	1000	15	103257	AFH1-02	A0060	WP039	TMS-4	S-020	TVL-1165
C3A	▲30	250	105596	AFH2-54	D0340	FP376.6 TC72		T-085	R2721 *
B	▲30	250							
C4	50	6	78573	SRE6V50	BBR50-6	TT6X50	TD-50-6	MQ-650	TVA-1100
C5	50	6	78573	SRE6V50	BBR50-6	TT6X50	TD-50-6	MQ-650	TVA-1100
C6	50	6	78573	SRE6V50	BBR50-6	TT6X50	TD-50-6	MQ-650	TVA-1100
C7	8	10VAC	100509	AC-PRS10V8	BBR16-90 BBR16-90†	TC108	TD-16-150 TD-16-150 †	MT-1516 † MT-1516 †	R2201 *
C8	8	10VAC	100509	AC-PRS10V8	BBR16-90 BBR16-90 †	TC108	TD-16-150 TD-16-150 †	MT-1516 † MT-1516 †	R2201 *

* Not normally in distributors stock. Available through distributor on order to manufacturer.
† Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C9	.027	400	103131					5BF-S27	10%
C10	.022	400	103351					5BF-S22	10%
C11	.0056	200	102086				GEM-16256	5BF-D56	10%
C12	.022	400	73562					5BF-S22	10%
C13	.0068	200	105577				GEM-16268	5BF-D68	10%
C14	.047	200	105578					2WF-S47	10%
C15	.022	200	103726					2WF-S22	10%
C16	.022	400	103351					5BF-S22	10%
C17	100		101853	NPO-SI 100	D6-101	L10T1	ZT-531	5GA-T1	10%
C18	.0068	200	105577				GEM-16268	5BF-D68	10%
C19	.047	200	105578					2WF-S47	10%
C20	.022	200	103726					2WF-S22	10%
C21	.022	400	103351					5BF-S22	10%
C22	.022	400	103351					5BF-S22	10%
C23	.0027	200	105576					5BF-D22	10%
C24	.018	400	105580					5BF-S18	10%
C25	.0012	400	105579					5BF-D12	10%
C26	.1	400	78922					5BF-P10	10%
C27	10-160		105574						
C28	.0012	200	103332					5BF-D12	10%
C29	.0033	600	102174				GEM-16233	6TM-D33S 10%*	10%
C30	.01	400	102384	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C31	.001	400	102426				GEM-1621	5BF-D1	10%
C32	.0022	400	102079					5BF-D22	10%
C33	.027	400	103131					5BF-S27	10%
C34	.022	400	103351					5BF-S22	10%
C35	.022	400	103351					5BF-S22	10%
C36	.01	600	102221A	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C37	560		105581		D6-561			MS-356	10%
C38	.0022	400	102079					5BF-D22	10%
C39	.001	400	102426A				GEM-1621	6TM-D1	

* Not normally in distributors stock. Available through distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750K	½	105599					Volume, Tap ② 250K & 500K
B	750K	½						Volume, Tap ② 250K & 500K
R2A	250K	½	105600	BB-103	AD47-250K-Z†	Q13-130		Tone, Left Channel
B	250K	½				M13-130		Tone, Right Channel
R3A	1meg	½	102421	AB-69	B47-1meg-S	B11-137	TA16L	Overload, Recording Ind.
B	Shaft			AK-1	Not Req.	SK2	Not Req.	
R4A	1meg	½	102421	AB-69	B47-1meg-S	B11-137	TA16L	Normal, Recording Ind.
B	Shaft			AK-1	Not Req.	SK-2	Not Req.	
R5A	1meg	½	103260	AB-69	B47-1meg-S	B11-137	TA16L	Right Channel Gain
B	Shaft			AK-1	Not Req.	SK-2	Not Req.	

† Use FS-3 Shaft.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R6	470K		502447	
R7	220K		502422	
R8	2200Ω		502222	
R9	470K		502447	
R10	1800Ω		502218	
R11	220K		502422	
R12	1800Ω		502218	
R13	33K		502333	
R14	12K		502312	
R15	220K		502422	
R16	3300Ω		502233	
R17	470K		502447	
R18	33K		502333	
R19	12K		502312	
R20	220K		502422	
R21	3300Ω		502233	
R22	1meg		502510	
R23	470K		502447	
R24	220K		502422	
R25	12K		502312	
R26	22K		502322	
R27	82K		502382	
R28	560K		502456	
R29	22K		502322	

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R30	820Ω		502182	
R31	100K		502410	
R32	330Ω	1	502133	
R33	47K		502347	
R34	270K		502427	
R35	470K		502447	
R36	220K		502422	
R37	1800Ω		502218	
R38	2200Ω		502222	
R39	22K		502322	
R40	470K		502447	
R41	220K		502422	
R42	1800Ω		502218	
R43	470K		502447	
R44	330Ω	1	502133	
R45	10Ω	2	522010	
R46	1meg		502510	
R47	100K		502410	
R48	100K		502410	
R49	33Ω	1	502033	
R50	3900Ω		502239	
R51	470Ω 5%	7(WW)	105583	
R52	15Ω	4(WW)	103285	

COILS

ITEM No.	USE	RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc. Trans.	105607					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② .73A	520VCT ② .150A	18V ② .3A	105598						
	SEC. 3	SEC. 4	SEC. 5							
	5V ② 1.8A	6.3VCT ② 1.5A								

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5700Ω	3-4Ω	105597	Z1109	A-2935	AU-609	A-8092 ①	26S49 ①	S-5X	① Drill new mounting hole.
T3	5700Ω	3-4Ω	105597	Z1109	A-2935	AU-609	A-8092 ①	26S49 ①	S-5X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: RCA Victor PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	100464 ①	6A21	① Used in Models STR-8, SS-8
SP2	3½"	PM	6-8Ω	105395 ②	3A15TZ6.4	② Used in Models STR-6, STR-8, SS-6, SS-8
SP3	3½"	PM	6-8Ω	105395 ②	3A15TZ6.4	③ Used in Models STR-6, SS-6
	8"	PM	3-4Ω	78597 ③	8A21	

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: RCA Victor PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.300A	103258	1643A	C1B	304B	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: RCA Victor PART No. FUSE	RCA Victor PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	#30AWG Copper Wire	2 1/4" Long						
M3	#30AWG Copper Wire	2 1/4" Long						

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Head	103277	Record-Play, Includes Male Connector
M5	Head	105362	Erase, Includes Male Connector
M6	Lamp	10321l	#1847
M7	Lamp	101857	NE51
M8	Lamp	101857	NE51
M9	Switch	105588	Stereo/Single-Voice/Music (Slide Type)
M10	Switch	105606	Record-Playback (Rotary Wafer Type)
M11	Switch	105586	Mark, Stereo/Single (Rotary Wafer Type)
M12	Switch	105605	Record-Playback (Rotary Wafer Type)
M13	Switch	101484	On-Off
M14	Motor	105350	
	Microphone	105590	Includes Cable

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	105585	Mark, Stereo/Single
Knob	105609	Speed Selection
Knob	105584	Tone
Knob	105608	Loudness
Pushbutton	105601	Music
Pushbutton	105602	Stereo
Pushbutton	105603	Single
Pushbutton	105604	Voice
Pushbutton	105592	Play (Includes CAM Assembly)
Pushbutton	105593	Rewind (Includes CAM Assembly)
Pushbutton	105594	Fast Forward (Includes CAM Assembly)
Pushbutton	105595	Assembly, Monitor
Handle	105744	
Cabinet	X4299	Black Mink, Complete With Hardware, Model STR-6
Cabinet	X4297	Maple, Complete With Hardware, Model STR-6
Cabinet	X4295	Mahogany, Complete With Hardware, Model STR-6
Cabinet	X4296	Oak, Complete With Hardware, Model STR-6
Cabinet	X4298	Walnut, Complete With Hardware, Model STR-6
Cabinet	X4301	Complete with Hardware, Model STR-8
Leg	Z-3733	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

SILVERTONE MODELS 9057, A, 9058, A, 9059, A, 9060, A (Ch. 528.53320, 321, 322)

SILVERTONE MODELS 9057, A, 9058, A, 9059, A, 9060, A (Ch. 528.53320, 321, 322)

MODEL 9057

SILVERTONE MODELS 9057, A, 9058, A, 9059, A, 9060, A (Ch. 528.53320, 321, 322)

TRADE NAME	Silvertone Models 9057, 9057A, 9058, 9058A, 9059, 9059A, 9060, 9060A (Ch. 528.53320, 528.53321, 528.53322)		
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois		
TYPE SET	AC Operated FM-AM Receiver With 4 Speed Automatic Record Changer		
TUBES	Thirteen		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	125 Watts, 1.21 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	535 - 1620KC	FREQ. MOD.	88 - 108MC

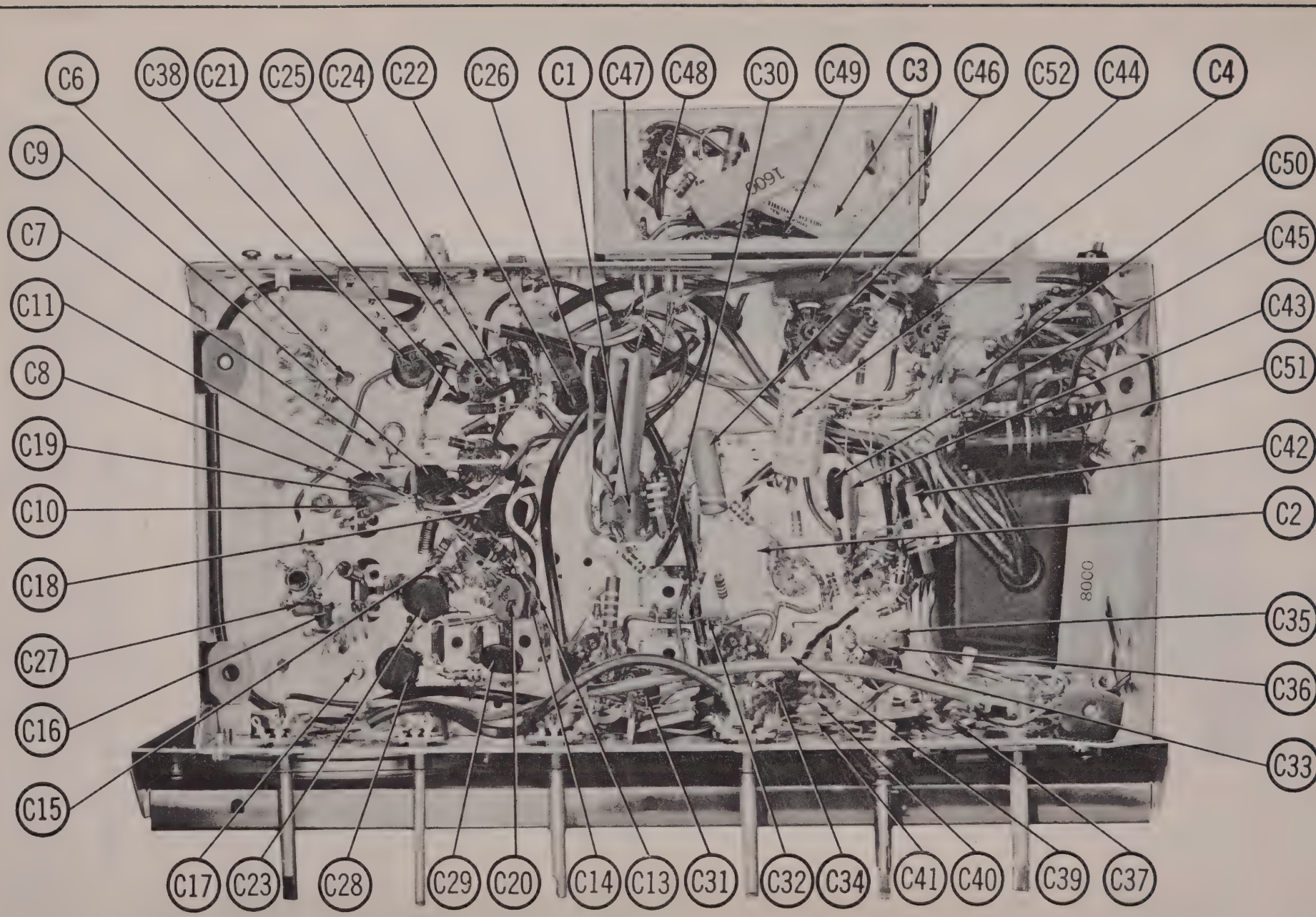
SILVERTONE RECORD CHANGER 528.56400 OR 528.56410

SET 430 FOLDER 13

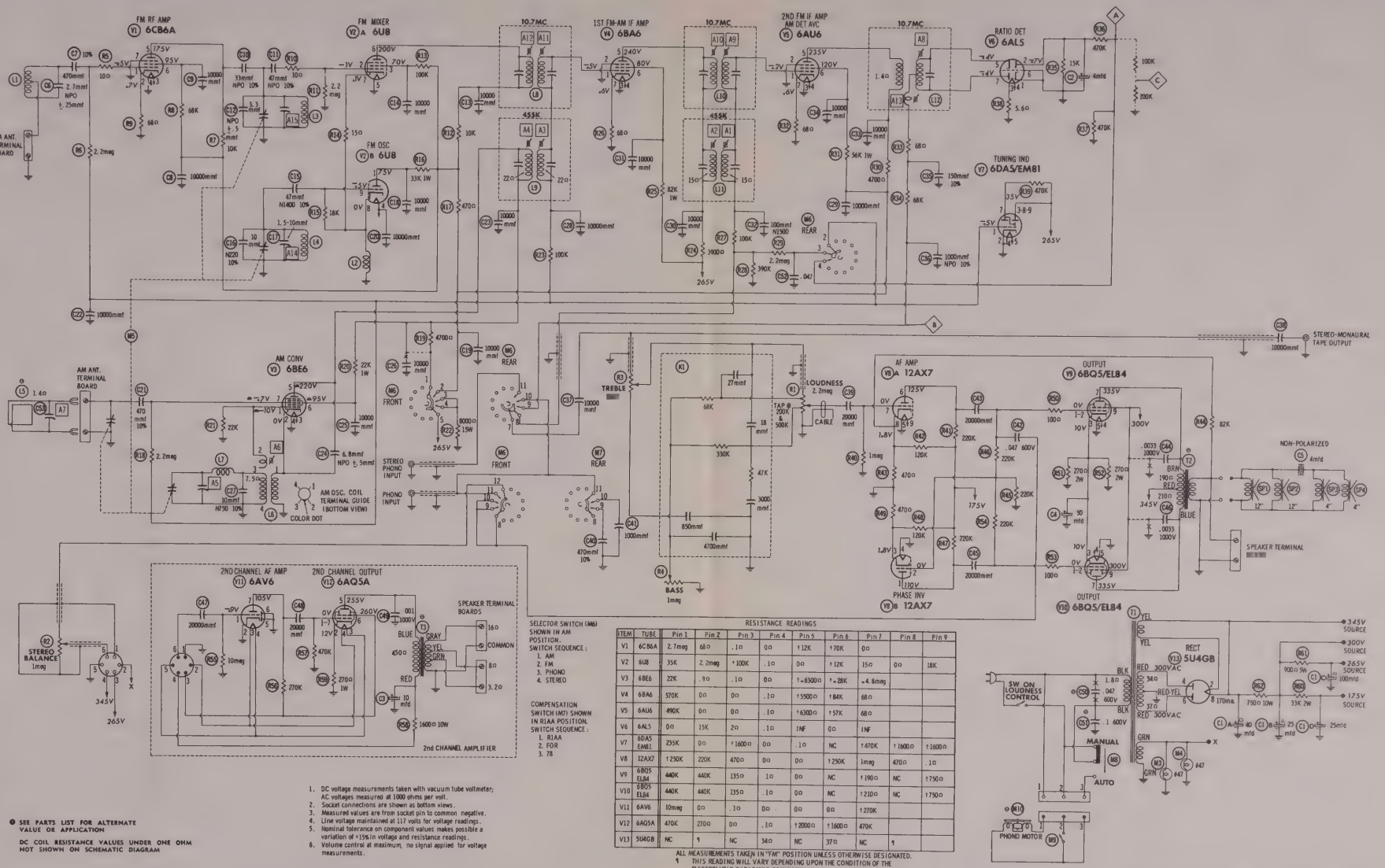
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H879



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



SELECTOR SWITCH (M6) SHOWN IN AM POSITION.
SWITCH SEQUENCE:
1. AM
2. FM
3. PHONO
4. STEREO

COMPENSATION SWITCH (M7) SHOWN IN RIAA POSITION.
SWITCH SEQUENCE:
1. RIAA
2. FOR
3. 78

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6A	2.7meg	68Ω	.1Ω	0Ω	↑12K	↑70K	0Ω		
V2	6U8	35K	2.2meg	↑100K	.1Ω	0Ω	↑12K	15Ω	0Ω	18K
V3	6BE6	22K	.9Ω	.1Ω	0Ω	↑=63000Ω	↑=28K	=4.8meg		
V4	6BA6	570K	0Ω	0Ω	.1Ω	↑5500Ω	↑84K	68Ω		
V5	6AU6	490K	0Ω	0Ω	.1Ω	↑630Ω	↑57K	68Ω		
V6	6AL5	0Ω	15K	2Ω	.1Ω	↑NF	0Ω	↑NF		
V7	6DA5 EM81	235K	0Ω	↑1600Ω	0Ω	.1Ω	NC	↑470K	↑1600Ω	↑1600Ω
V8	12AX7	↑250K	220K	470Ω	0Ω	0Ω	↑250K	1meg	470Ω	.1Ω
V9	6BQ5 EL84	440K	440K	135Ω	1Ω	0Ω	NC	↑190Ω	NC	↑750Ω
V10	6BQ5 EL84	440K	440K	135Ω	.1Ω	0Ω	NC	↑210Ω	NC	↑750Ω
V11	6AV6	10meg	0Ω	.1Ω	0Ω	0Ω	0Ω	↑270K		
V12	6AQ5A	470K	270Ω	0Ω	.1Ω	↑2000Ω	↑1600Ω	470K		
V13	5U4GB	NC	¶	NC	340	NC	370	NC	¶	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
↑ MEASURED FROM PIN 8 OF V13.
= MEASURED IN "AM" POSITION.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1959

SILVERTONE MODELS 9057, A, 9058, A, 9059, A, 9060, A (Ch. 528.53320, 321, 322)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
Suggested Alignment Tools: A1, A2, A8, A9, A10, A11, A12, A13..... General Cement #5097, 8727
Walsco #2515
A3, A4..... General Cement #5009, 8195, 8274, 8275, 8728, 8987
Walsco #2531
A5, A7, A14, A15..... General Cement #5004, 5008, 5009
Walsco #2520
A6..... General Cement #8606, 8606L, 8282, 9295
Walsco #2526, 2543, 2544, 2545

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	1620KC	"	A5	"
3.	"	"	535KC	"	535KC	"	A6	Adjust for maximum output while rocking tuning gang. Repeat steps 2 and 3.
4.		Loop	1400KC	"	Tune to 1400KC signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.		High side to ungrounded tube shield of 6U8 (V2). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point (A). Common to chassis.	A8, A9, A10, A11 A12	Adjust for maximum output.
6.		"	"	"	"	DC probe to point (B). Common to point (C).	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.		High side to ungrounded tube shield of 6U8 (V2). Low side to chassis.	10.7MC (450KC Swp.)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A8, A9, A10, A11 A12	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
6.		"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A13	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of cross-over lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	270Ω Carbon Resistor	Across FM antenna terminals with 270Ω in high side.	108MC (400∿ Mod.)	FM	108MC	Across voice coil	A14	Adjust for maximum output.
8.	"	"	88MC	"	88MC	"	L4	Adjust for maximum output by compressing or expanding coil turns. Repeat steps 7 & 8.
9.	"	"	104MC	"	Tune to 104MC signal	"	A15	Adjust for maximum output.
10.	"	"	98MC	"	Tune to 98MC signal	"	L3	Adjust for maximum output by compressing or expanding coil turns.
11.	"	"	90MC	"	Tune to 90MC signal	"	L1	Adjust for maximum output by compressing or expanding coil turns. Repeat steps 7 thru 11.

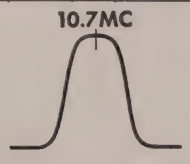


FIG. 1

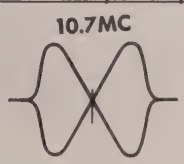
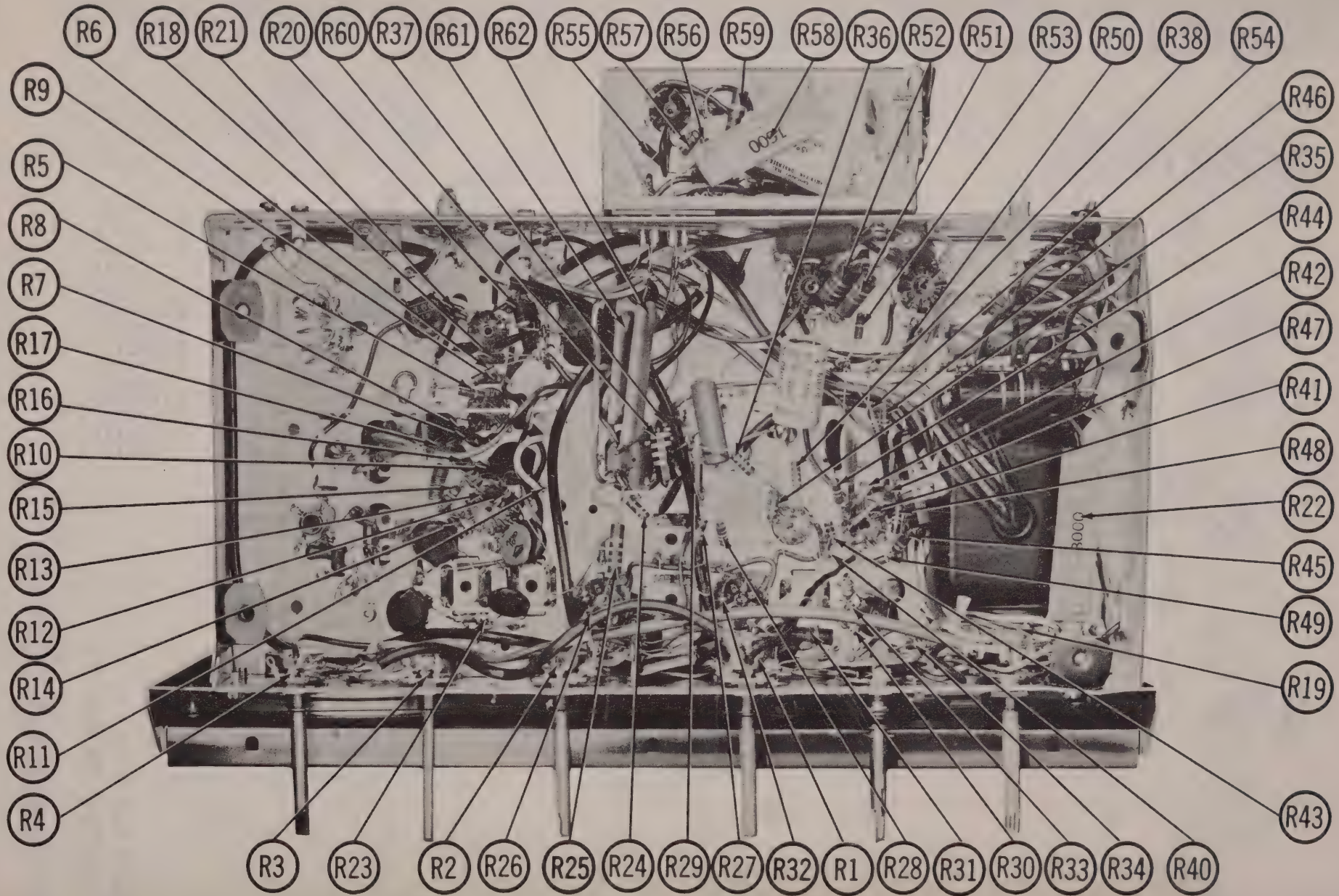


FIG. 2



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6CB6A	
V2	FM Mixer - FM Osc.	6U8	
V3	AM Converter	6BE6	
V4	1st FM-AM IF Amp.	6BA6	
V5	2nd FM IF Amp. - AM Det. - AVC	6AU6	
V6	Ratio Detector	6AL5	
V7	Tuning Indicator	6DA5/EM81	
V8	AF Amp. - Phase Inv.	12AX7	
V9	Output	6BQ5/EL84	
V10	Output	6BQ5/EL84	
V11	2nd Channel AF Amp.	6AV6	
V12	2nd Channel Output	6AQ5A	
V13	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	350	18-35-3					Q-222.2	TVLS-4635.11*
B	▲25	350						MT-4520	
C	▲100	350							
D	25	350							
C2	4	50	18-25-0	PRS150V4	BBR4-50	TT50X4	TD-4-50	MT-0504	TVA-1402
C3	10	350	18-38-0	PRS350V10	BR1045	TC62	TD-10-450	MT-4510	TVA-1604
C4	50	25	18-23-0	PRS25V50	BBR50-25	TT25X50	TD-50-25	MT-0250	TVA-1206
C5	4	150NP	18-9-5	NP-PRS450V4	BBR8-150 BBR8-150 †	TC510	TD-8-150 TD-8-150†	MT-1508 MT-1508 †	TVAS-1401 *

† Connect negative leads together.
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	2.7		15-279121						NPO±.25mmf
C7	470		15-47111		MD-471		JL-347		10%
C8	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C9	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C10	33		15-330611	NPO-SI 33	DTZ-33	C10Q33C	CNO-433	5TCC-Q33	NPO 10%
C11	47		15-470611	NPO-SI 47	DTZ-47	C10Q47C	CNO-447	5TCC-Q47	NPO 10%
C12	3.3		15-339131	NPO-DI 3.3	DTZ-3R3	C10V33C	CNO-533	5TCCB-V33	NPO ±.5mmf
C13	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C14	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C15	47		15-470115						N1400 10%
C16	10		20-121-0						N220 10%
C17	1.5-10		19-2-5						
C18	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C19	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C20	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C21	470		15-47111		MD-471		JL-347		10%
C22	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C23	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C24	6.8		15-689131	NPO-DI 6.8	DTZ-6R8	C10Q68C	CNO-568	5TCCB-V68	NPO ±.5mmf
C25	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C26	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	10		15-100614	N750-DI 10	DTN-10	C10Q1U	CN7-410	5TCU-Q1	N750 10%
C28	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C29	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C30	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C31	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C32	100		15-10116						N1500
C33	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C34	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C35	150		15-15111		DD-151	L10T15	CNO-315	5TCC-T15	10%
C36	1000		15-10261						NPO 10%
C37	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C38	10000		15-10317	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C39	20000		15-20317	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C40	470		15-47111		MD-471		JL-347		10%
C41	1000		15-10216	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C42	.047	600	16-47358	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C43	20000		15-20316	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C44	.0033	1000	16-33268	P1088N-0033		CUB16D33	GEM-16233	MB-D33	
C45	20000		15-20316	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C46	.0033	1000	16-33268	P1088N-0033		CUB16D33	GEM-16233	MB-D33	
C47	20000		15-20317	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C48	20000		15-20317	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C49	.001	1000	16-10268	P1088N-001	D6-102	CUB10D1	GEM-1021	10TM-D1	
C50	.047	600	20-647-1	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	①
C51	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	②
C52	.047	200	16-47328	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C53			19-165-0						

① May not be used in some versions.
② Some versions may use .047mfd in this application (Part #20-647-1).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2.2meg	½	24-318-0	BT-174		Q18-139XX	UDT-295	Loudness, Tap ② 200K & 500K
B	Switch			KB-1 or KR-1 *		76-1	US-26	
R2A	1meg	½	24-324-0	B-744	A47-1meg-Z	Q13-137	U53	Stereo Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	24-175-2	B-60	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			AK-16 †	FS-3	NQ	DS-37	
R4A	1meg	½	24-174-2	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.
† Shaft Coupler; use portion of original shaft as needed.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R5	10Ω		60-10001	
R6	2.2meg		60-22502	
R7	10K		60-10301	
R8	68K		60-68301	
R9	68Ω		60-68001	
R10	10Ω		60-10001	
R11	2.2meg		60-22502	
R12	10K		60-10301	
R13	100K		60-10401	
R14	15Ω		60-15001	
R15	18K		60-18301	
R16	33K	1	60-33311	
R17	470Ω		60-47101	
R18	2.2meg		60-22502	
R19	4700Ω		60-47201	
R20	22K	1	60-22311	
R21	22K		60-23201	
R22	8000Ω	15	61-136-0	
R23	100K		60-10401	
R24	3900Ω		60-39201	
R25	82K	1	60-82311	
R26	68Ω		60-68001	
R27	100K		60-10401	
R28	390K		60-39401	
R29	2.2meg		60-22502	
R30	4700Ω		60-47201	
R31	56K	1	60-56311	
R32	68Ω		60-68001	
R33	68Ω		60-68001	

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R34	68K		60-68301	
R35	15K		60-15301	
R36	470K		60-47401	
R37	470K		60-47401	
R38	5.6Ω		60-56901	
R39	470K		60-47401	
R40	1meg		60-10501	
R41	220K		60-22401	
R42	120K		60-12401	
R43	470Ω		60-47101	
R44	82K		60-82301	
R45	220K		60-22401	
R46	220K		60-22401	
R47	220K		60-22401	
R48	120K		60-12401	
R49	470Ω		60-47101	
R50	100Ω		60-10101	
R51	270Ω	2	60-27121	
R52	270Ω	2	60-27121	
R53	100Ω		60-10101	
R54	220K		60-22401	
R55	10meg			
R56	270K			
R57	470K		60-47401	
R58	1600Ω	10		
R59	270Ω	1		
R60	33K	2	60-33321	
R61	900Ω	5	61-17-0	
R62	750Ω	10	61-128-0	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil	10-144-1					.55 Microhenry
L2	RF Choke	10-129-1					
L3	FM RF Coil	10-145-1					
L4	FM Osc. Coil	10-3-3					
L5	Loop Ant.	82-9-1 ①					Includes C53
L6	AM Osc. Coil	10-46-4					
L7	RF Choke	10-129-1					.55 Microhenry
L8	1st FM IF	10-44-2	16-3487	FM-254	1463		
L9	1st AM IF	10-101-2	16-6758	BC-352	12-C1	RF-1	
L10	2nd FM IF	10-44-2	16-3487	FM-254	1463		
L11	2nd AM IF	10-45-2	16-6758	BC-353	12-C2	RF-2	
L12	Ratio Detector	10-15-0	17-3498	FM-255	1465		

① Part #82-7-1 used in Models 9057, 9058, 9059, 9060.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
				SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
	PRI.	SEC. 1	SEC. 2							
T1	117V ② 1.21A	600VCT ② .170A	5V ② 3A	80-24-0						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ② 4.8A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
			SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.								
T2	5100Ω CT	6-8Ω	80-66-1 ①	Z1011	A-2905	AU-609	A-3870	24S55	S-55X	
	5300Ω CT	6-8Ω	80-65-1 ②	Z1011	A-2905	AU-609	A-3870	24S55	S-55X	
T3	6000Ω	16Ω Tap ② 8Ω, 4Ω	80-58-1 ③	Z1002	A-2902	AU-604	A-3849	24S64	S-53X	
			80-74-1 ④							

① Channel 1. Chassis 528.53320, 528.53322
② Channel 1. Chassis 528.53321
③ Channel 2. Chassis 528.53320, 528.53321
④ Channel 2. Chassis 528.53322

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	12"	PM	14-16Ω	33-361-4 ①	12A6AZ16 ①	① Parallel and Phase
SP2	12"	PM	14-16Ω	33-361-4 ①	12A6AZ16 ①	
SP3	4"	PM	3-4Ω	33-362-4 ②	4A15TZ4.1 ②	② Parallel and Phase
SP4	4"	PM	3-4Ω	33-362-4 ②	4A15TZ4.1 ②	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Tone Compensation	18mmf, 27mmf, 820mmf, 3000mmf, 4700mmf, 47K, 68K, 330K	13-18-3	Sprague TCS-14

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	33-299-0	13-TB				

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	
M2	83-1250 (78) 83-1251 (LP)	† E-98 or ♦ E-98D † E-98X or ♦ E-98XD		† Jewel ♦ Diamond

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Lamp	89-7	#47
M4	Lamp	89-7	#47
M5	Tuning Cap.	19-4-4	AM-FM, 4 Gang (AM Sections: Ant. 5-420mmf, Osc. 9-135
M6	Switch	69-272-0	Selector, 4 Position, Rotary Wafer Type mmf)
M7	Switch	69-271-0	Compensation, 3 Position, Rotary Wafer Type
M8	Switch	69-269-0	Automatic Power Control, DPST, Slide Type
M9	Switch	84-6552	Changer On-Off (Includes Spring #70-247-0)
M10	Motor	59-72	Phono (Ch. 528. 56400)
	Motor	59-89	Phono (Ch. 528. 56410)

CABINETS & CABINET PARTS

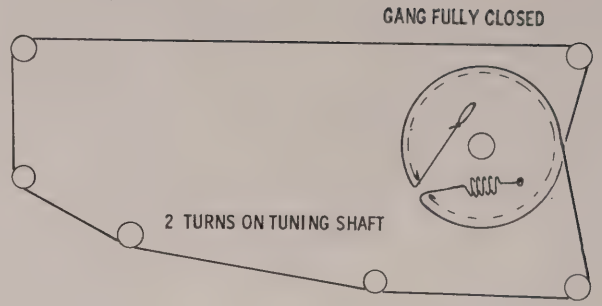
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

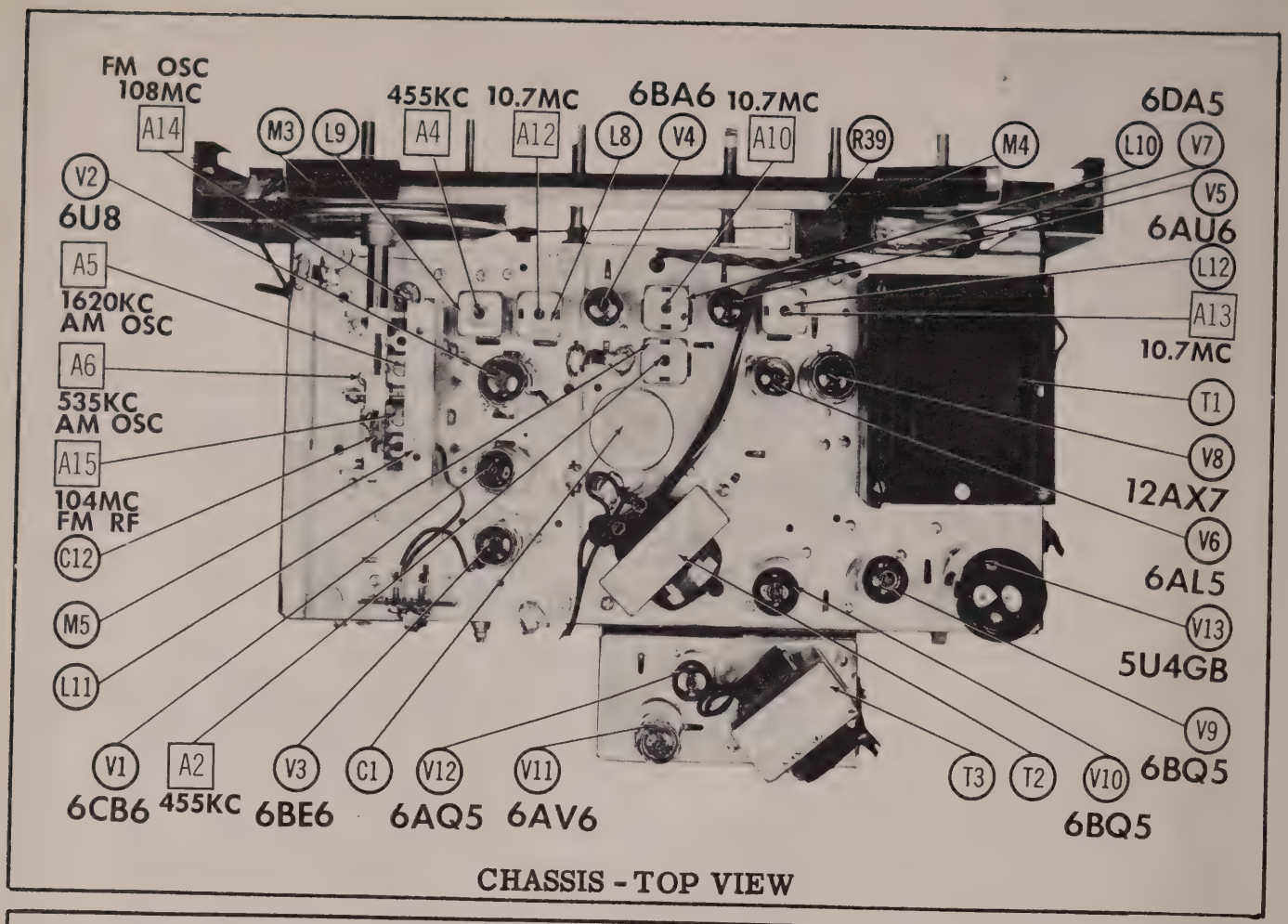
NAME	PART NO.	DESCRIPTION
Knob	52-1109-0	Tuning
Knob	52-737-0	Control, 4 used
Knob	52-1104-0	Compensator
Knob	52-1110-0	Stereo Balance
Knob	52-1122-0	Phono Off-On-Reject
Knob	52-917-0	Phono Speed Control
Cabinet	42-72-3	Magogany, Models 9057, 9057A
Cabinet	42-73-3	Blond, Models 9058, 9058A
Cabinet	42-74-3	Fruitwood, Models 9059, 9059A
Cabinet	42-75-3	Walnut, Models 9060, 9060A
Leg	49-340	Mahogany, 4 used, Models 9057, 9057A
Leg	49-341	Blond, 4 used, Models 9058, 9058A
Leg	49-343	Fruitwood, 4 used, Models 9059, 9059A
Leg	49-342	Walnut, 4 used, Models 9060, 9060A
Pointer	52-67-1	
Dial Glass	62-95-1	Channel
Dial Glass	62-96-1	Channel, 2 used
Dial Scale	67-649-0	

WIRING DATA

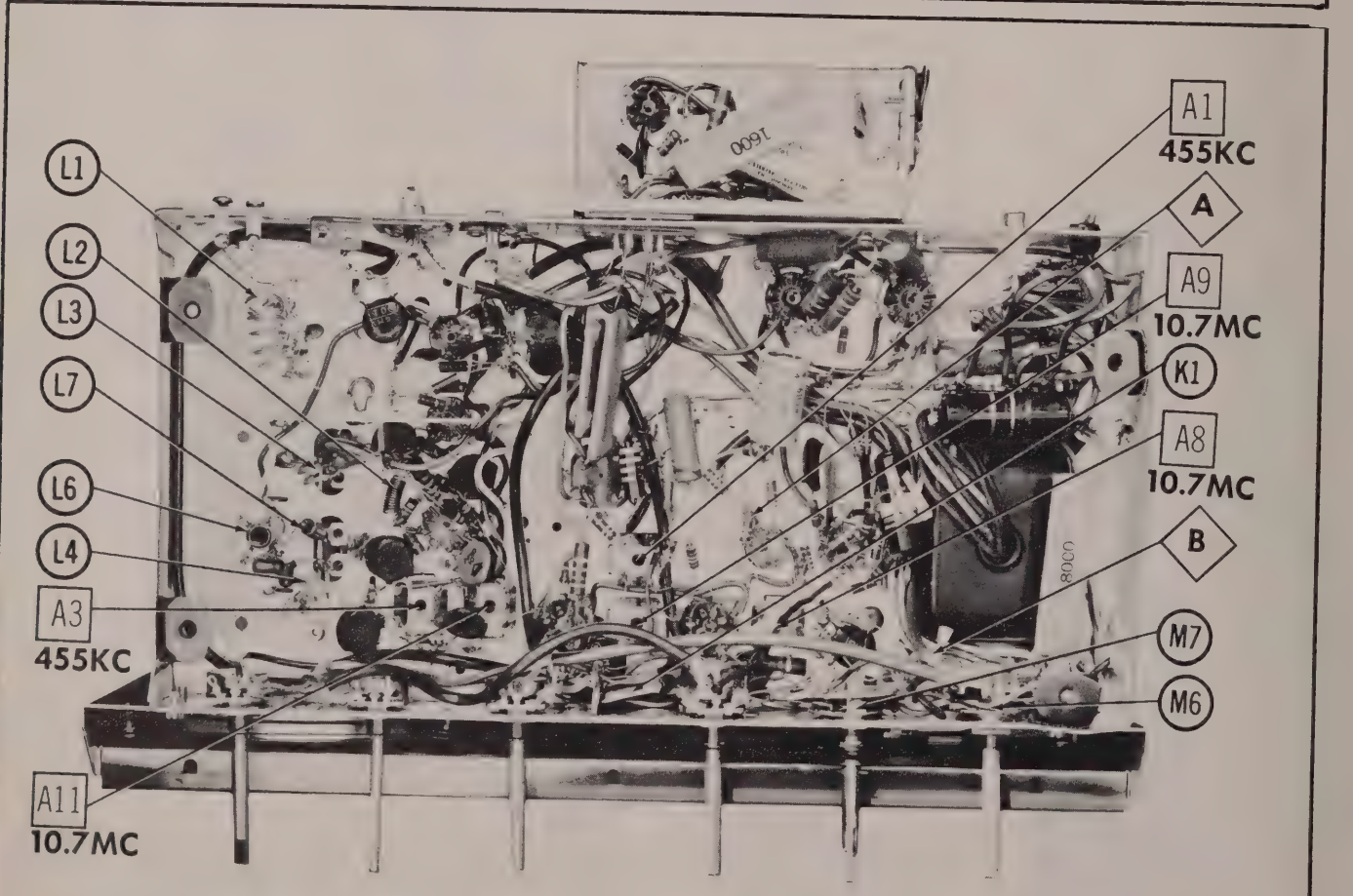
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

DIAL CORD STRINGING





CHASSIS - TOP VIEW



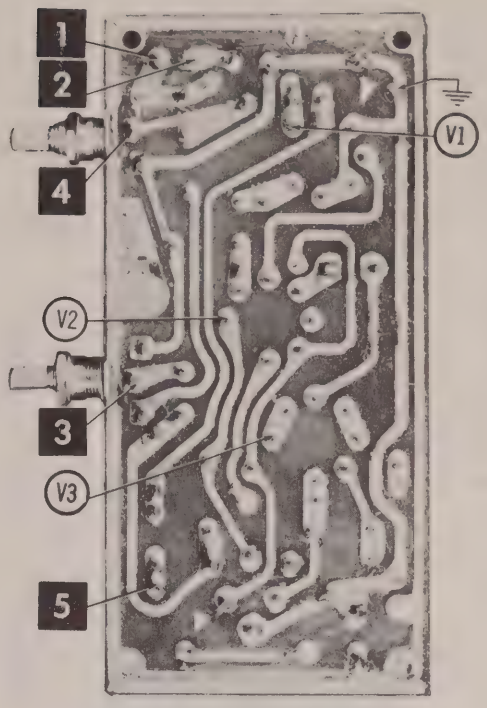
CHASSIS BOTTOM VIEW - ALIGN, INDUCTOR, MISC IDENT.

PHOTOFACT* Folder

with CIRCUITRACE*

SYLVANIA
MODEL 4405 (Ch. 1-622-1)

SYLVANIA
MODEL 4405 (Ch. 1-622-1)

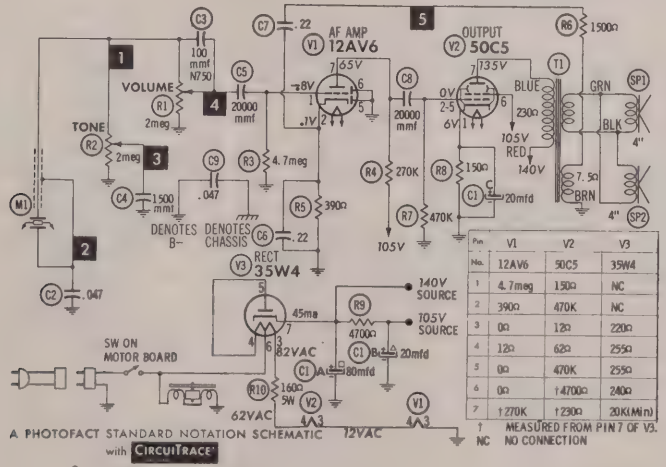


ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

A Howard W. Sams CIRCUITRACE* Photo

TRADE NAME	Sylvania Model 4405 (Ch. 1-622-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products Inc., 700 Ellicott St., Batavia, N. Y.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES	Three
POWER SUPPLY	110 - 120 Volts AC - 60 Cycles RATING 24 Watts, .26 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SYLVANIA 1-318-1 - PHOTOFACT SET 401 FOLDER 13.



Pin No.	V1 12AV6	V2 50C5	V3 35W4
1	4.7meg	150Ω	NC
2	390Ω	470K	NC
3	0Ω	12Ω	220Ω
4	12Ω	62Ω	255Ω
5	0Ω	470K	255Ω
6	0Ω	↑4700Ω	240Ω
7	↑270K	↑230Ω	20K(Min)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE*

© Howard W. Sams & Co., Inc. 1959

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H790

SET 430 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AV6	
V2	Output	50C5	
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	181-3033	AFH3-81-50	BBRQ53215C	PFP311.12	CDB-T-1002	FMT-333	PCL-3415
B	20	150							
C	20	20							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.047	400		P488N-047	DF-503	BC6S47J	ACE6147	4SE-S47	
C3	100			N750-DI100	DTN-100	C10T1U	CN7-310	5TCU-T1	N750
C4	1500			BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	
C5	20000			BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C6	.22	200		P288N-22		BC6P22J	ACE6022	4SE-P22	
C7	.22	200		P288N-22		BC6P22J	ACE6022	4SE-P22	
C8	20000			BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C9	.047	400		P488N-047	DF-503	BC6S47J	ACE6147	4SE-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2meg	½	153-0155	B-76 †				Volume
R2	2meg	½	153-0155	B-76 †				Tone

† Use AK-26 adaptor bushing. Enlarge mounting hole in cabinet; use mounting nut furnished.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SYLVANIA PART No.	NOTES
R3	4.7meg			
R4	270K			
R5	390Ω			
R6	1500Ω			

ITEM No.	RATING OHMS	RATING WATT	SYLVANIA PART No.	NOTES
R7	470K			
R8	150Ω			
R9	4700Ω			
R10	160Ω	(5WW)	187-0054	

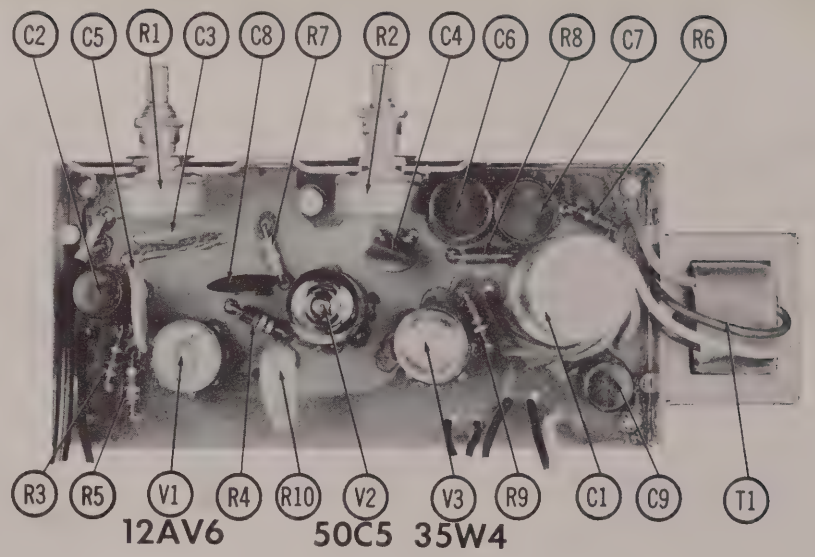
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC. 1	REPLACEMENT DATA SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2600Ω	145Ω	141-0074							
		SEC 2								
		1-2Ω								
	turns	Ratio								
		SEC 1								
	4.2	: 1								

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	539-0427①	4A07 ①	① Parallel And Phase
SP2	4"	PM	3-4Ω	539-0427①	4A07 ①	

CHASSIS—TOP VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA SYLVANIA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M1		55-T or 81-TB	GD-J			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA SYLVANIA PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2		† S-66 or †♦ S-66SD or ♦ S-66D	† W-75TPS or †♦ W-75DS or ♦ W-75TPD	† Jewel ♦ Diamond

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob Panel Assembly	740-0181 760-0133	Volume, Tone Includes AC Cord Set

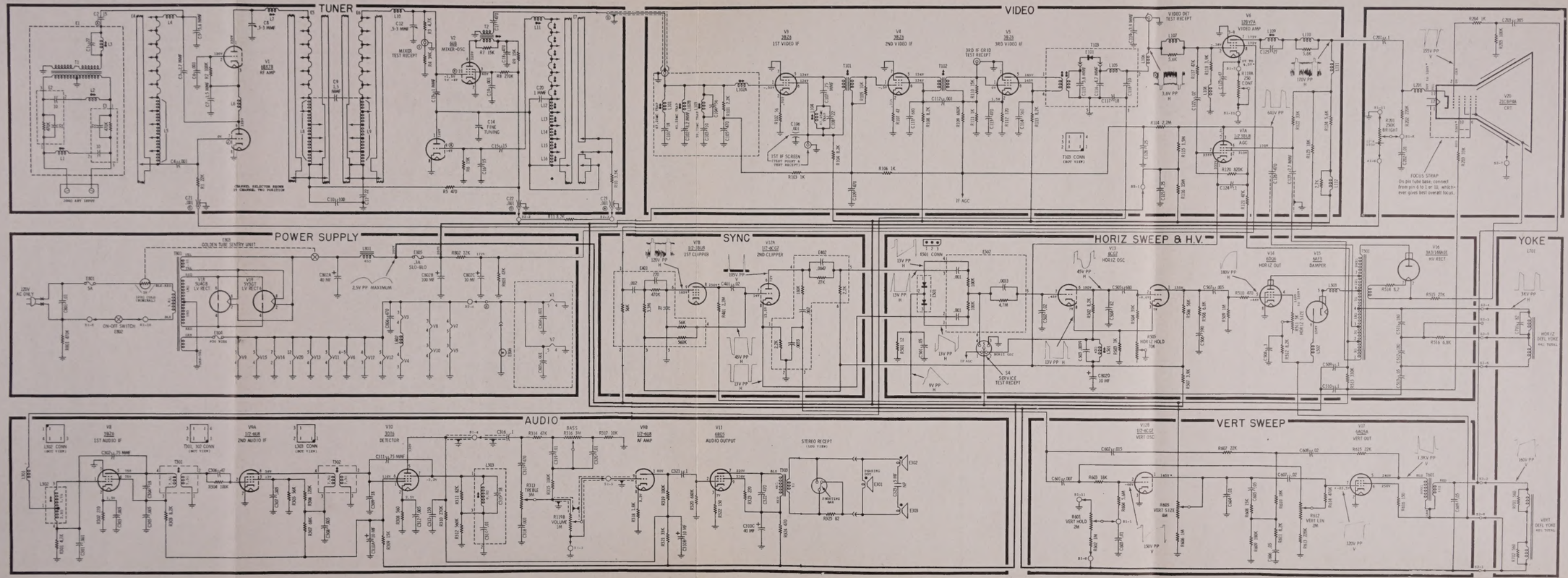
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

MOTOROLA MODELS

Y21K104B, M, W,
21K104B, M, W,
21K105B, MC, W,
21K108W,
21K109M,
21K110W,

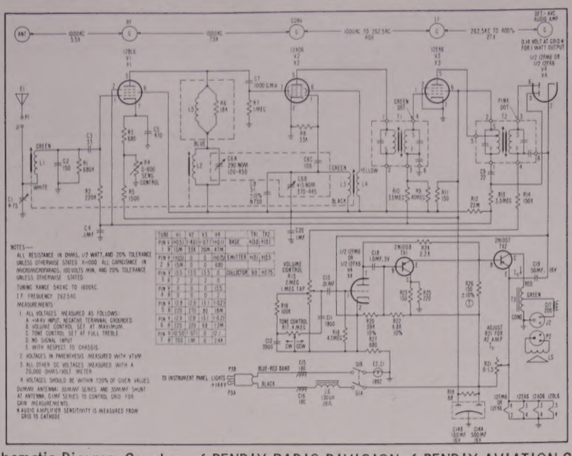
(Ch. TS-552, Y)



Schematic Diagram Courtesy of MOTOROLA INC.

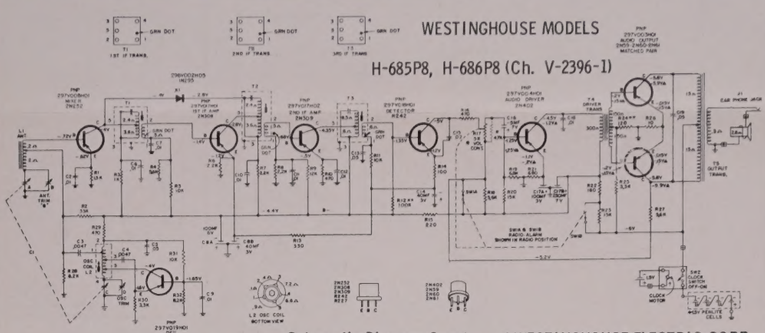
©Howard W. Sams & Co., Inc. 1959

EDSEL MODEL 94BE (B9KF-18805-D, -18806-C)



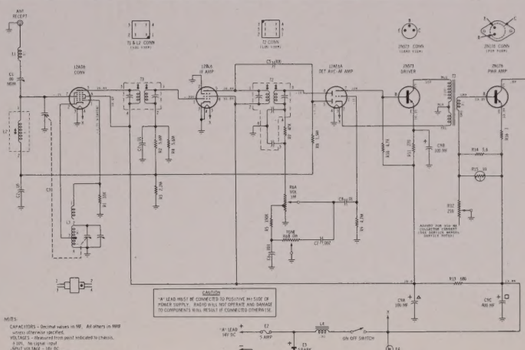
Schematic Diagram Courtesy of BENDIX RADIO DIVISION of BENDIX AVIATION CORP.

WESTINGHOUSE MODELS H-685P8, H-686P8 (Ch. V-2396-1)



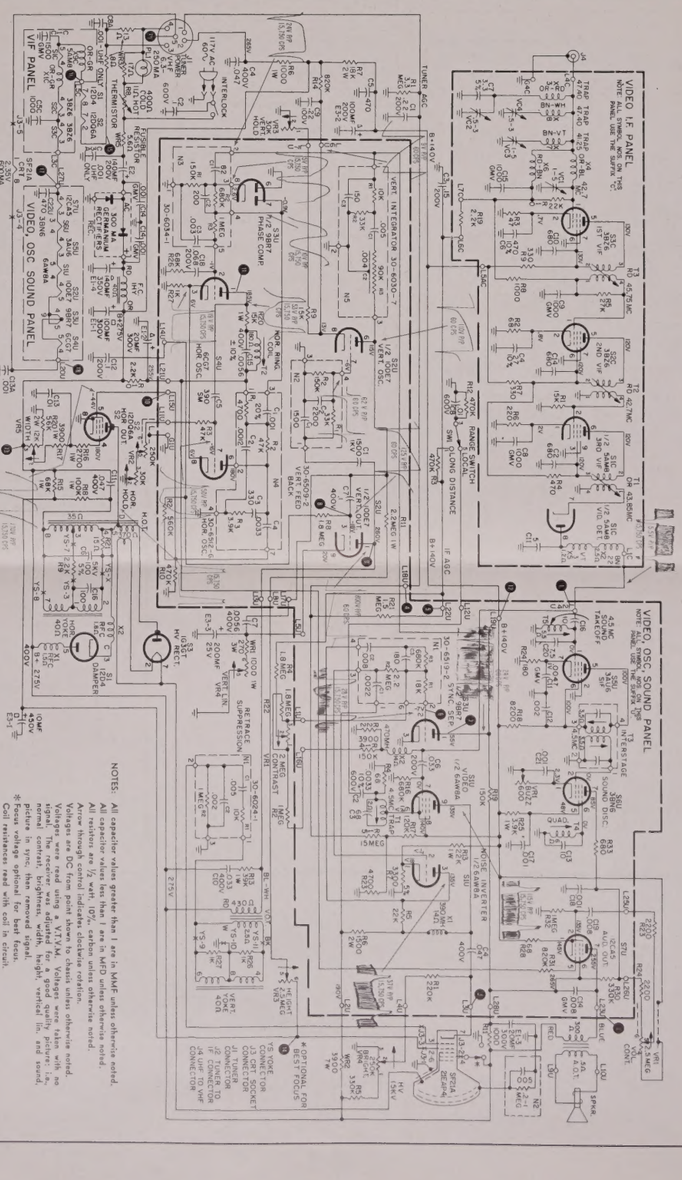
Schematic Diagram Courtesy of WESTINGHOUSE ELECTRIC CORP. TV-RADIO DIV.

AMERICAN MOTORS MODEL 8990582 (93MR)



Schematic Diagram Courtesy of MOTOROLA INC.

PHILCO MODELS G4242, L, G4654, L, W, UG4242, L, UG4654, L, W (Ch. 9137, U)



NOTES: All capacitor values greater than 1 are in MMF unless otherwise noted.
All capacitor values less than 1 are in MFD unless otherwise noted.
All resistors are ½ watt, 10%, carbon unless otherwise noted.
Voltages are DC from point shown to chassis unless otherwise noted.
Voltages are DC from point shown to chassis unless otherwise noted. The receiver was adjusted for a good quality picture (i.e., picture in sync, then removed signal.
Voltages were read using a V.T.V.M. Voltages were taken with no signal. The receiver was adjusted for a good quality picture (i.e., picture in sync, then removed signal.
* Focus voltage optional for best focus.
Coil resistance read with coil in circuit.
• Indicates a coil resistance of less than 1 ohm.

Schematic Diagram Courtesy of PHILCO CORP.